This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

7.4 - 3

PRESENTED TO
THE LIBRARY
OF THE
UNIVERSITY OF MICHIGAN
By Mrs J D Baldwin
Nov. 2 1891

SB
93
.K62
1847

THE

KITCHEN AND FRUIT GARDENER.

38279

A SELECT MANUAL

OF

KITCHEN GARDENING,

AND

CULTURE OF FRUITS,

CONTAINING

FAMILIAR DIRECTIONS FOR THE MOST APPROVED PRACTICE IN EACH DEPARTMENT,

DESCRIPTIONS OF MANY VALUABLE FRUITS,

AND

A CALENDAR OF WORK TO BE PERFORMED EACH MONTH IN THE YEAR.

THE WHOLE ADAPTED TO

THE CLIMATE OF THE UNITED STATES.

PHILADELPHIA:
LEA AND BLANCHARD.
1847.

Entered, according to the Act of Congress, in the year 1844, by

LEA AND BLANCHARD,

in the clerk's office of the District Court of the United States in and for the Eastern District of Pennsylvania.

STEREOTYPED BY J. FAGAN.

PRINTED BY T. K AND P. G. COLLINS, PHILADELPHIA.

PUBLISHERS' NOTICE.

With a view of improving the English work, from which this has been printed, it was placed in the hands of the same person who so ably revised the "Complete Florist." His additions have been as numerous as could be expected for so small and unpretending a volume; and it is now submitted with a hope that it may aid in extending information on the subject on which it treats.

Philadelphia, June, 1844.

INTRODUCTION

TO THE AMERICAN EDITION.

Most persons who possess a garden, whether it be for flowers, fruit, or kitchen vegetables, it is probable desire to hear the remarks of others, on the best mode of culture, provided the cost be not disproportioned to the information given; but nearly all publications on Horticulture have been in such expensive forms as to confine the circulation to the few; on the contrary, the plain unpretending style which has been adopted for this work (a reprint from an English publication, received with favour at home, and amended to suit the climate of the United States,) will enable all who feel an interest in the subject to benefit by the hints presented, and we hope it may prove serviceable to the class of enquirers which it is specially designed to benefit—those who from taste or convenience cultivate a plot of ground without incurring the expense of a regular gardener.

The great extent of territory in the Union, and consequent diversity of climate, render it difficult to specify periods for the performance of work, which shall apply equally throughout the country, for whilst in the south they may be luxuriating in the earlier vegetables of the spring, we of the north may still be bound by the frosts of winter. To overcome that obstacle as far as practicable, the seasons, not the

months, have been named in the directions on kitchen gardening, and it is believed the exercise of a little judgment will enable the cultivator, whatever may be the latitude of his location, correctly to time his operations. The methods for performing the work may be the same in all places—good modes apply with equal benefit in every section.

A matter of primary importance in kitchen gardening, it must be self-evident, is the selection of good seed; without that, land, skill, diligence are thrown away. When the cultivator has occasion to purchase his supply, (which is generally the case in small gardens, where the produce of many sorts within narrow limits would be a heterogenous mixture) true economy will be found to consist in procuring the best, even at an advanced price on the trashy seeds, which are frequently vended. If the question be asked how are the best to be obtained, we answer, purchase only from responsible persons, and, so far as practicable, from a well-known grower himself, or those who represent him in the sale, and stake their credit for the quality of what they vend. Vast quantities of seed are imported into this country from Europe which are worthless: the vitality of many is seriously impaired by the confined air of the ship, others appear to have been the stale refuse of the shops, and some, which prove sound, are found to be unsuited to our climate. There are a few kinds, among them Cauliflower and Broccoli, which it may be necessary to import; but, with those exceptions, it is safer to depend on seeds of American growth, but by no means on such as are casually collected and sold to

dealers, to be again vended without the slightest knowledge of their age or quality. We have elsewhere, in these pages, alluded to the importance of procuring fruit-trees from sources to be relied on; that is even a more serious consideration than the purchase of seeds, for in the latter case, vexatious as may be an imposition, one season's labour only may be lost; but in fruit the imposture can in most instances only be detected after years of culture, and anticipation of return for the care and anxiety incurred.

It was the design of the publishers to have issued the MANUAL OF KITCHEN GARDENING, and the FRUIT-GARDEN, distinct, but they finally concluded, with a view of making it still more acceptable, to unite the two, without enhancing the price. Another work from the same publishers, the COMPLETE FLORIST, treats of ornamental plants, and, with the present work, affords instruction on the several branches of Gardening, which they hope may prove useful to such as feel an interest in the subject.

CONTENTS.

Preliminary Observations 12
Situation of a Garden 14
Aspect of a Garden 14
Comparative Properties of Soil 14
Variety and Properties of Manures 15
Cultivation of Kitchen Vegetables 17
Artichoke, (Jerusalem) 18
Asparagus 18
Beans, (the Mazagan, the Broad Windsor, and Early Long Pod) 19
Beans, (Kidney, or Bush—the Haricot of the French). 20
Beans, (Scarlet Runners) 20
Lima Bean 20
Carolina, or Sewee Bean 21
Beet 21
Borecole 21
Broccoli 21
Brussels Sprouts 22
Cabbages 22
Red Cabbage 23
Capsicum, Pepper 24
Carrots 24
Cauliflower 25
Celery 26
Chives 27
Corn, Indian 27
Corn Sallad, Fetticus or Lamb's Lettuce 28
Cress 28
Cucumbers 28
—— for Forcing 28
—— under Hand-Glasses 29
Egg Plant or Melongene 30
Endive 31
Eschalots 31
Horse-radish 32

Leeks 32
Lettuce 32
Melon 33
To force Melons 34
Mushrooms 42
Mustard 44
Nasturtium 45
Onions 45
Okra 46
Parsneps 46
Parsley 47
Peas 47
Potatos 50
Pumpkin 51
Radishes 51
Rhubarb 52
Salsafy or Oyster Plant 53
Sea Kale 53
Spinach 55
Squash 55
Tomato or Love Apple 56
Turnips 56

PART SECOND.

CULTIVATION OF CULINARY HERBS.

Balm 58
Bazil, Sweet 58
Borage 58
Camomile 58
Dill 59
Fennel 59
Hyssop 59
Lavender 59
Liquorice 59
Marjoram 60
Marigold 60
Mint 60
Penny Royal 61
Purslane 61
Rampion 61

Rape, or Colewort 61
Rosemary 61
Rue 62
Sage 62
Savory 62
Sorrel 62
Tarragon, or L'Estragon of the French 62
Thyme 62
Wormwood 63

PART THIRD.

DESTRUCTION OF VERMIN INJURIOUS TO CULINARY CROPS.

Destruction of the Turnip or Cabbage Fly 64
Destruction of Ants 64
Destruction of the Aphides 65
Destruction of the Black Grub 65
Destruction of Caterpillars 65
Destruction of Mice 66
Destruction of Slugs 66
Destruction of Snails 66
Destruction of the Rookworm 67

PART FOURTH.

MONTHLY OPERATIONS IN THE KITCHEN GARDEN.

January 67
February 67
March 67
April 69
May 70
June 71
July 73
August 73
September 73
October and November 74
December 75

THE FRUIT-GARDEN.

Apple-Trees 77
Pruning 77
Espalier Training 79
Planting 80
Apricot 85
The Barbary 88
Cherries 88
The Chestnut 90
Currants 90
The Fig Tree 91
Filberts 92
Gooseberry 92
Medlars 93
The Mulberry 93
The Nectarine 94
Peaches 94
The Pear 96
Plums 102
Quinces 103
The Raspberry 103
Strawberries 104
The Grape Vine 105
Walnuts 108
Grafting and Budding 109
Cleft Grafting 111
Inarching, or Grafting by Approach 113
Root Grafting 114

THE MANUAL

OF

KITCHEN GARDENING.

PRELIMINARY OBSERVATIONS.

THERE are a great number of persons who inhabit the vicinity of large towns, and resident throughout the country generally, who possess the means of cultivating a small garden, and who would find both health and pleasure in the pursuit, but who are deterred from the attempt because, not possessing any knowledge of the subject, they could only do so by employing a gardener, which would not only considerably increase the expense, but frustrate all the advantages which would result from a personal cultivation of the ground. It is principally for the use of such this little work is designed; and, by its assistance, any one before unacquainted with the subject may safely undertake the management of a garden with reasonable hope of success.

The cultivation of *culinary vegetables* is a primary object with many families who possess a garden; and, therefore, this work is exclusively devoted to that division of the art. In two other works, similar to this, the art of managing a Flower and Fruit Garden is described and explained.

All systems of gardening must be acted upon with some discrimination; that is to say, while proper attention be paid to the general directions and rules laid down, allowance must be made for the difference and variety of soils, of situation, and of climate, which require a strict attention to the mode of management, peculiarly adapted to each; and it is the almost proverbial inattention to those very important points, which is the principal cause of that want of success which proves often so discouraging to the inexperienced gardener. The situation proper for a garden cannot invariably be selected; though, where it can, it is of no inconsiderable importance, and should be assiduously attended to.

SITUATION OF A GARDEN.—The chief points to be attended to, are a proper degree of shelter from cutting winds, and full exposure to the influence of the sun. The elevation ought to be sufficiently great to be above the ill effects of damp vapours, and yet at the same time not too high nor too cold. The winds principally to be guarded against are the north, north-east, and north-west, as it is from those points that our coldest winds proceed. It is an invariable rule, that there should never be any trees of a considerable height on the south side of a garden; for during the winter, and early in the spring, they throw their lengthened shadows into the garden, at a time when every sunbeam is valuable. On the east, also, the trees should be sufficiently removed, so as to admit the early morning rays. It may sometimes happen that trees stand in positions injurious to the garden, and yet we may be unwilling to sacrifice them; in such cases partial relief may be obtained by digging a deep trench near them, on the garden side, and cutting off those roots which extend into it. If the situation be too high, it exposes the crops too much to the cutting winds; if too low, it is seldom sufficiently dry at the bottom; and a natural sourness exists in low situations, which is not easily eradicated by draining, or by any other means.

ASPECT OF A GARDEN.—A good aspect for a garden is universally allowed to be that which has a gentle declivity towards the south, and inclining rather to the east, in order that it may receive the benefit of the morning sun. A north aspect is unfavourable for general purposes, it being always cold and late; nevertheless it must be admitted, that such an aspect is not without its advantages in summer, by retarding many crops which would otherwise be brought to seed before they had acquired a size sufficient for culinary purposes. Salads, spinach, and cauliflower are brought to perfection in northern aspects, when they will make but a very slight progress, if exposed to the full powers of the sun. In such situations, peas and many other vegetables yield more abundant crops during the hot summer months, particularly in dry seasons. The inclination of a garden towards the south, if artificially made, should not exceed one foot in twenty; but if the inclination of it be naturally greater, no good reason can exist for making any alteration in it, for the ground which has a considerable slope towards the south, is always the warmest.

COMPARATIVE PROPERTIES OF SOIL.—It is admitted by all gardeners, that the soil best calculated for general garden purposes should be of rather a light, rich, friable, loamy texture; dry, mellow, and capable of being wrought at all seasons, and of a good depth, that is, from two feet to three feet and a half, and that the worst kinds are those of the very light, sandy, and stiff clayey texture. A loam of a middling texture, rather inclining to sand, will be found the most suitable for the majority of kitchen

vegetables. If the soil be too strong, the roots of plants push weakly into it, and are apt to canker and perish: if too light, and at the same time poor, the roots of vegetables will wander far in search of nourishment, and be unable to collect a sufficient quantity for their support and maintenance. It is a false principle to depend upon manures entirely, for were they to be had in the greatest abundance, a too free application of them would have effects highly injurious to the quality of vegetables in general. In the formation of a garden, a moderate and prudent expense should be bestowed at the beginning, if the undertaking is to be ultimately crowned with success and satisfaction.

Strong stubborn clays are to be avoided, being the most unfit of all others, as few vegetables will prosper in them. Sand, lime, chalk, and coal-ashes, correct the tenacity of clayey soils, and make them work more pleasantly; the former, if sharp, or if it be river or sea-sand, with a mixture of shells, will, if given in a sufficient quantity, render it of a lighter texture. Chalk should be spread on the surface in autumn, so that the whole may be pulverized by the action of the winter's frost and rains, and dug in in the spring. It corrects the acidity of the clay, and renders it at the same time more friable. Lime acts much in the same way, but should be used more sparingly. Coal-ashes have much the same effect upon stiff soils. Lime-rubbish dug in is a good corrector of stiff soils, and is less objectionable than the coal-ashes. Decayed tanners' bark, bog mould, or any vegetable mould applied to strong soils, lightens them considerably. Such soils cannot be too much wrought by the spade; every opportunity should be taken to ridge and rough-dig strong soils; and such operations should not be done in wet weather, nor when the ground has been saturated with wet.

Gravelly soils are also very unfit for garden-ground, as being generally of themselves sterile, and not readily enriched by manures, the finer particles of which are washed off by the rains. Light, sandy, or even gravelly soils are, however, not without their advantages, because they are much warmer, and by affording a still less quantity of moisture, the crops will not grow so luxuriantly, and therefore be much sooner fit for use than those which are grown on strong clayey soils. Early spring and winter crops are not only thus earlier on sandy soils than upon clayey, but are also much more capable of resisting the frost.

In procuring mould, either for renewing or improving the soil, care should be taken to prefer such only as is near the surface, as it is in general the most productive and fruitful, and is in reality the true vegetable earth. The top spit, that is, to the depth of one foot from the surface of any common or field, which has not been cropped, is to be preferred, and the fuller it is of fibrous matter, the better it will prove for the growth of the plants.

VARIETY AND PROPERTIES OF MANURES. — The manures in general use in gardens are numerous, but we shall

only notice those which are considered the most useful; and of these, the dung of horses, if not the best, is certainly the most general in use. Next to the dung of horses, that of oxen and cattle is in the greatest request, and, if slightly fermented, is an excellent manure for light, hot soils; it is also well calculated for soils of a dry absorbent nature, as it retains its moisture for a greater length of time than most others. During warm weather there is a process in action in the manure heap, the effect of which is the abstraction by votalization of a valuable portion of the manure, the evolution of *gaseous ammonia*, which the experiments in chemistry as applied to agriculture have proved to be of vast importance.

The strong affinity of this volative product for sulphuric acid, is well known, and hence by incorporating *gypsum* or plaster of paris, into which this principle largely enters, with the animal manure, we obtain a compound, without scent, and of the most important character to the farmer and gardener.

Green vegetable matter is an excellent manure, but less attended to than it ought to be. Instead of collecting all the weeds, useless vegetables, &c. in a garden into one heap, let the following simple mode be adopted:—When a piece of ground is going to be dug, go round and collect all the decaying vegetables, and immediately dig them in. The sweepings of grass-walks and lawns are also of much use as a vegetable manure; and on being brought every day into the garden, they should be dug in, before fermentation commences. But it must be observed, that they should not be buried at too great a depth, otherwise fermentation will be prevented by compression and the exclusion of air.

Sea-weeds, where they can be procured, make excellent manure for most vegetables, but particularly for sea-kale, artichokes, and asparagus. This manure, however, is very transient in its effects, and does not last more than for a single crop, which is accounted for by its containing a large portion of water, or the elements thereof.

The dung of birds, either wild or domesticated, affords a powerful manure, particularly that of the former. Pigeons' dung was and still is in great repute; but it should only be used as a compound, or, if used as a simple manure, the greatest care must be observed in the distribution of it. It has been found to be the best manure for strawberries of any that has been tried.

The dung of sheep and deer affords good manure, but is seldom used in gardens. Soot is a very powerful manure, and ought to be used in a dry state, and thrown on the surface of the ground. It has been advantageously used in crops of onions. It is used at all times with good effect, and, where it has been used, no maggot has appeared.

The ashes of wood, if not too much burnt, are considered to be

a lasting manure: they are generally used amongst turnips, and are supposed to be of use in protecting them from the fly.

Of all mineral manures, lime is most known, and generally used: it should, however, never be applied with animal manures, unless they be too rich, or for the purpose of preventing noxious effluvia. It is injurious when mixed with any common dung.

Manures, whether animal or mineral, are of such importance to vegetation, that all possible diligence should be used in the collecting and preparing of them for the different purposes for which they may be required. By a proper application of them, and by a rotation of cropping, founded on just principles, the worst garden-ground may be not only improved, but rendered fit for the production of every vegetable that is usually cultivated.

CULTIVATION OF KITCHEN VEGETABLES.

ARTICHOKE.—This vegetable is propagated either from seed or offsets. If from the seed, it should be sown in rows a foot apart, early in the spring, (middle of March) and thinned to about the same distance as soon as they are an inch high. They should be kept clean from weeds, and the ground about them tilled now and then during the summer, and in the autumn they will be large enough to plant out, where they are to stand and to bear. They are plants which require a good deal of room, and a very rich soil. If propagated from offsets, the old plants should be examined for the strongest and most healthy, which must be separated with as much root as possible. Some holes, about fifteen inches in diameter, and twelve inches deep, must then be made at the distance of about three feet from each other, with intervals of four feet filled in with good dung and rich compost. Two or three of the offsets must be put into each hole, six or eight inches asunder, with a few inches of the tops trimmed off. Water them occasionally, and dig the ground well between them. The middle of spring (15th of April) is favourable time for making these plantations, which will yield a crop in the autumn of the same year. The artichoke, although in appearance a very robust plant, is extremely susceptible of frost. Each clump or stool should therefore have the earth drawn up pretty much about it in the fall of the year; but in dry weather, if possible, and in very severe weather, some litter should be laid on the top of each stool, being always taken off as soon as the frost is completely out of the ground. In the spring, the whole of the ground ought to be carefully dug, and the earth levelled down from the sides of the stools; the offsets should then be taken off, and the plants left to produce their crop. The artichoke enjoys a deep, rich soil, and should be well manured every second year at farthest, but manure every year is to be preferred. There are two sorts,—the French, or oval-headed; and the Globe: the latter is the best. When it is intended to save the seed, some of the earliest

heads should remain uncut, which will flower like a thistle in the summer, and the seed will be ripe in the fall. Gather it when perfectly dry, rub it out of the husk, and put it by in a dry place, where it will be good for three years at least.

ARTICHOKE (JERUSALEM.) — Early in the spring (middle of March,) is the proper time for planting the Jerusalem Artichoke, and, being of a very hardy nature, it will thrive in any situation, and even in a soil of an ordinary kind. It is not easily eradicated when once introduced into a garden. The Jerusalem Artichoke is propagated in the same manner as the potato, by planting the bulb or tuber in rows about a yard asunder, and nine or ten inches distant from each other in the row, covering them with three inches depth of earth. The ground should be well manured for them, and no further trouble is required, except to keep them clear from weeds, and give a light digging between the rows.

ASPARAGUS.—In the making of Asparagus beds, the chief point to be considered is to make choice of a proper soil: choose the best which the garden affords; it must not be wet, nor too strong, nor stubborn, but such as is moderately light and pliable, so that it will readily fall to pieces in digging or raking, and in a situation that enjoys the full sun. The ground intended for Asparagus beds should have a large supply of rotten or other good dung, laid several inches thick; it should then be regularly trenched two or three feet, and the dung buried equally in each trench as the process goes on. The ground being made level, it should be divided into beds, four feet and a half wide, with paths two feet wide between bed and bed. Four rows of Asparagus should be planted in each bed, and ten or twelve inches distance to be allowed between plant and plant in the row, letting the outside rows of each bed be nine inches from the edge; or they may be planted only in single rows, two feet and a half apart, or in narrow beds containing two rows of roots only. It is of very great importance for ensuring success in the planting of Asparagus to lift the roots carefully, and to expose them to the air as short a time as possible. While planting, therefore, it would be proper to keep the roots in a hamper or basket amongst a little light earth, and covered with a mat. No plant feels an injury in the root more keenly than Asparagus, and, from the brittleness of the roots when they are once broken, they do not readily shoot again.

The following is the most approved method of planting them:—strain the line parallel with the beds, nine inches from the edge; then with a spade cut out a small trench or drill close to the line about six inches deep, making that side next the line nearly upright; and when one trench is opened, plant that, before you open another, placing the plants upright ten or twelve inches distant in the row, or the ground may be drilled for the roots to the depth of four or five inches with the garden hoe. The plants may be placed

flat in the bottom of the trench, or nearly upright against the back of it, so that the crown of the plants may stand upright, and two or three inches below the surface of the ground: let them be all placed an equal depth, spreading their roots somewhat regularly against the back of the trench, at the same time drawing a little earth up against them with the hand as you place them, in order to fix the plants in their due position, till the whole be planted. When one row is planted, draw the earth immediately with a rake into the drill over the plants, and open another drill or trench as before directed. When they are all planted, let the surface of the beds be raked smooth, and clean them from stones.

The Asparagus being planted, the next care is, when the plants come up, which will be about the latter end of the spring, supposing the plantation to have been made early in the spring (middle of March) or the previous autumn, which is a good time, if the soil be light, to keep them clear from weeds, which must be well attended to during the summer. It will be three years from the time of planting before the Asparagus plants produce buds large enough to be cut for use, though sometimes in good ground, a few of the largest may be cut the second year after planting, which, however, is by no means advised, as it greatly weakens the plants and retards their growth.

In making new plantations, instead of forming the beds with plants, the seeds may be sown at once in the beds; by this practice, the plants are not disturbed by being removed, and consequently produce more regular crops. When the plants are about six inches high, they must be thinned, leaving the strongest about nine or ten inches apart. During the first season, keep them clear of weeds, as they will be very tender, and easily hurt by them. In about three years after sowing, a few buds may be cut: the fourth or fifth year the buds will be both stronger and more abundant.

Beans (the Mazagan, the Broad Windsor, and Early Long Pod.)—The best soil for these varieties, is a stiff, heavy loam, and the time for sowing is as early in the spring as the weather will admit. Unless they blossom before the heat of summer, the yield will not compensate the trouble of planting. For five rows, each five yards long, one pint of seed will be enough in early sowings; and a quarter of a pint more for late sowings. The best sorts are the Mazagan, and Early Long Pod. The Broad Windsor, though in some respects preferable for the table, is not so certain a crop, and unless in cool climates, or when planted very early in the spring, seldom makes return for the trouble. When sown in drills, they should be exactly similar to those for the dwarf kind of peas, with subsequent similar diggings and hoeings, but they will not require so much earthing up. When a crop of Beans is intended to be produced between the rows of cabbages or kale, it will be found to be more convenient to sow the seed in beds on a warm

border, and plant them in the required situation by a dibble, when they are about two inches high. They should be liberally watered at the time of planting, as well as on any subsequent occasion, when they may require it. It is a very profitable plan to plant rows of beans at four or five feet distant, and place cabbages or other crops between them. When the plants are just coming into bloom, the dolphin or black fly commits frightful ravages, if not timely checked. The best remedy is cutting off the parts with a pair of scissors; but even when the dolphin does not appear, it is advisable to take about an inch from the top of each bean plant, which will prevent them growing any higher, and exhausting their strength to no purpose. This should be done just as the first blossoms are beginning to fade. It is not profitable in a small garden to save this seed.

Beans (Kidney, or Bush—The Haricot of the French.)—A light rich soil is almost indispensable for French Beans; and to have them in perfection it will be necessary to open trenches about four inches deep, to dig in some good manure, to draw back the earth over it, and to open drills with the hoe two and a half inches deep. The time for sowing is from the middle of spring (15th April,) to close of summer, (20th Aug.) If sown earlier, without protection, the frost will almost inevitably destroy the young plants; they may, however, be sown in a sheltered seed-bed, and planted out when the frost is past, which will expedite the crop. For an early crop, the best sort is the Six Weeks; for the next, the China Red-eye, Red-speckled Valentine, Brown Valentine or Refugee.

Beans (Scarlet Runners).—This kind of Bean may be planted in any soil which is not too damp, three or four inches asunder, along the bottom of a wall, and trained to strong junk or packthread; or they may be planted in the open ground, at a distance of from four to six feet between the drills, and trained to poles eight or ten feet high, or along the two sides of a path, with sticks seven feet high, bent over so as to form an arch.

For four rows, four yards long each, half a pint of seed is enough: the seed should be planted about the middle of spring; or if the weather be cool and wet, defer it till the close, (1st May) in drills two inches deep, covering them with the same quantity of earth, and observing to sow them in double rows when the situation is exposed. It is advisable that the rows should run from north to south, in order that they may be duly exposed to light. This bean, though very profitable in England, is not of much value here, as in dry, warm summers, the blossoms drop prematurely without setting fruit. Snails and slugs must be carefully guarded against when the plants are young. The best way is to search for them very early in the morning, and likewise to scatter quick-lime on the ground.

The Lima Bean is a delicate variety, and requires care in start-

ing it in spring. It is useless to attempt forcing it in advance of warm weather; and though some practice sprouting the beans in a hot-bed, and transplanting them to the hills in which they are to grow, but little is gained thereby. If there be any advantage, it is simply in securing the vegetation of the seed, which, when planted in the open air, is not unfrequently destroyed by a cold damp spell of weather.

The mode of culture, is to form hills slightly elevated, in which a liberal quantity of well decomposed manure has been incorporated; in these hills half a dozen beans are planted to secure a sufficiency; but three vines at most, in each hill, should stand; at the time of forming the hills, or subsequently as may be most convenient, insert securely a stout pole nine or ten feet in height, to which assist the vine in its efforts to adhere; when it has got firm hold it will take care of itself. But little culture can be given this crop, further than to keep down weeds.

The Carolina or Sewee Bean resembles the Lima, but is not so large; it is, however, more hardy, and bears abundantly.

BEET.—The seed for an early crop, should be sown early in spring, (15th March) though they are then sometimes destroyed by frost, and the labour has to be repeated; for the main autumn and winter supply, sow at any time until early in summer, (20th June) on deep, rich and well-manured ground, in drills at eighteen inches asunder, and eight inches apart in the rows. Two or three seeds should be put in each place, and about half an inch deep. The rows should then be trodden firmly, if the ground be dry, and, when the plants are two or three inches high, the weakest should be drawn, leaving but one remaining in each space. In the autumn, on the approach of frost, (15th Oct.) the roots should be taken up, the leaves cut off within a quarter of an inch of the crown, and then put away in some dry place, or packed in sand like carrots, for winter use. Beets may be transplanted, and will under that management attain to a very good size. They should remain in the seed-bed till about the size of a radish, and be put immediately into very fine earth, although they will not be as free from fibres as those that are left to stand where they are sowed.

BORECOLE.—Sow the seed in the middle of spring, (15th April) like other cabbage seed; let the plants be set in a rich, well-manured soil, at intervals of two or two and a half feet by eighteen or twenty inches apart in the rows, to be earthed up as they rise This applies to the upright varieties; the dwarf kinds are usually sown early in autumn (13th Sept.) either in drills or broad cast, and protected during winter by straw, cedar brush, or any covering which will lay lightly. It is in use as greens during the winter, and in the spring until it shoots, when it is no longer good.

BROCCOLI.—There are three or four varieties or kinds of Broccoli,

the purple, the white, the sulphur and the green. The time for sowing is the middle of spring, (15th April) and they may be transplanted about the middle of summer, (20th July) or a portion may be put out rather earlier, and thus a succession secured. The Broccoli nearly resembles the Cauliflower in flavour, and the white variety is scarcely distinguishable from it, by an ordinary observer; but the purple cape, is the more certain in this climate; when managed, as herein described, they commence heading early in autumn, and in favourable seasons a regular supply may be had until early in winter.

Brussels Sprouts.—This plant rises up with a very long stem, which has a spreading open head at the top, but which sends out from its sides great numbers of little cabbages, each being of the bulk of a large walnut. The large leaves are broken down in order to give the little cabbages room to grow; and in the autumn these begin to be in perfection, and continue to be an excellent vegetable throughout the winter. The time of sowing the seed is the middle of spring (15th of April). The treatment of the plants until planted out, is the same as that of the cabbage, and the distance at which the plants ought to stand, the same as those mentioned for the Broccoli. Much care is required in the saving of the seed of this plant; to effect which, the crown should be cut off, and the seed stems and flowers allowed to come out nowhere, but from the little cabbages themselves. It is most likely owing to negligence in this respect, that we hardly ever see such a thing as real Brussels Sprouts.

Cabbages.—Cabbages will thrive well in any richly-manured soil, provided it be not too dry. A deep mellow loam is better suited to them, than a sandy or gravelly one. The time for sowing the seed is very important, and should be regulated according to the time the crop is wanted. For an early summer crop, the sowing should be made early in autumn (15th September). The beds should be raked smoothly, and beaten well with the back of the spade, or trodden down when the soil is dry and friable. It will be found to be of great advantage to strew some soot over the beds when sown, or when the plants have come up.

On the approach of winter weather, they should be dibbled in as thickly as they can stand, in a cold frame or box, provided with a cover, which may be removed at pleasure, and which should be raised every day or two, during clear weather, to admit light and air. It will be advisable to examine closely from time to time to guard against the depredations of moles and mice, which sometimes make great havoc among them; early in the spring (15th of March) they should be transplanted to the compartment of the garden designed for them. When transplanting, particular care should be taken not to break the roots, and to have as much earth as possible attached to them. Always cut off the extremities or

tails of the roots, that is, the long tapering root that descends from the centre of the stem perpendicularly into the soil, as this operation will increase and facilitate the formation of fibrous roots. At the time of performing the operation of pricking out the plants, they should be sorted, so as to collect all those of the same size together; otherwise, when afterwards planted out, the crop will come in irregularly, for the larger plants will always be ready for use before the smaller ones.

The better kinds for the early crops are the Large Early York, Landreth's Large York, and Sugar-loaf. The Bullock-heart is a superior variety, but from being exceedingly tender is kept with difficulty through the winter. There are many other early sorts scarcely distinguishable, *except by name*, but the above are the more desirable.

If from any cause a supply of plants were not obtained in autumn, the crop may be advanced by sowing the seed in a hot-bed, at the close of winter, or very early in the spring (1st March); for the formation and management of which see page 34; but if that expense and trouble be inexpedient, a few plants may be forwarded in pots and boxes, kept in a kitchen window, care being taken to give them plenty of air in suitable weather, and water. For the late autumn and main winter supply, the seed may be sown about the middle of spring (10th to 15th April), and the transplantation may be at various times from the early part to middle of summer (20th June to 20th July). The sorts best adapted for late crops are Drumhead, Flat Dutch or Bergen, Drumhead Savoy, and Curled Savoy. The two former produce hard, firm heads, and are grown extensively in the vicinity of Philadelphia for "sour kraut," and for shipping to southern ports—but for family use, and where quality is the object, the Drum: Savoy, and Curled Savoy, are far preferable; they boil more tenderly and are without the strong flavour possessed by the hard heading kinds.

The small kinds, the York, Sugar-loaf, &c. may be planted from sixteen inches to two feet of interval between the rows, and from twelve to eighteen inches apart. The larger sorts, the Drumhead, Flat Dutch, &c. from two feet and a half to three feet between the rows, and with two feet at least between plant and plant in the rows.

THE RED CABBAGE seed may be sown at the same time with the Drumhead, &c. and treated in the same manner—they are used solely for pickling.

Room should be given in proportion to the richness of the ground, which, for these larger sorts, ought to be dug very deep, and be extremely well-manured. When planting out in summer, if the earth be very dry, it should be stirred deeply where the plants are to be placed; they should be firmly planted, the earth pressed tightly around them, especially near the roots, and water freely applied; where the plantation is extensive the latter part of this direction is not easily observed, and in such cases it may be better

to await rainy weather. Till they are well established, water must be occasionally given; and when they are so, digging between the plants and earthing must be regularly performed. Indeed, digging is of the utmost consequence, because, as it is by the roots that cabbages derive their principal sustenance, every operation of the spade which allows those roots to spread freely in search of food through the surrounding earth must greatly tend to increase their growth.

When any little knobs or clubbings are seen bulging on the roots, they ought to be pared off with a sharp knife, as they often, but not always, contain a burrowing grub, which checks the growth of the plant, and which also becomes a little sharp-beaked weevil, that eats the young leaves like the turnip fly.

When the Cabbages have been cut, if the ground be not immediately wanted, the stumps may stand till a crop of sprouts be obtained; or, where the ground is required for another crop, they may be taken up with large balls of earth to the roots, and planted in a trench in any spare corner of the garden, at half a foot apart, always observing to deprive them of all their old leaves as soon as the head is cut off, that the young sprouts may not be robbed of their nourishment.

The *cabbage fly* is frequently so voracious as to devour the young plants as soon as they appear above ground, and inexperienced persons are thereby led to doubt the vitality of the seed. With every exertion it is difficult to destroy the fly—a solution of tobacco freely sprinkled over them, or air-slacked lime dusted on the leaves when damp, is sometimes effectual. Another method is to secure a hen, having a young brood, in a coop, the chickens having free access to the plants, exterminate the flies. As a last resort, sow in boxes elevated two or three feet above the earth; when the plants are established, place the boxes on the ground, else the plants may burn.

To keep the heads during Winter, bury the stalk and part of the head with earth—over which, if the cold be severe, sprinkle straw.

Capsicum, Pepper.—The seed may be sown in a gentle hot-bed early in spring (15th March), or late in spring (1st to 15th May), on a warm border, and when the plants are of a suitable size to transplant, set them out after the manner directed for cabbage plants. The large sweet, and bell-shaped, are principally used for pickling—the cayenne for grinding.

Carrots.—Early in the spring (15th March) is the best season for sowing the seed, for which a spot of light ground should be chosen in an open situation. The ground should be trenched one good spade deep at least, or rather it should be double dug. Observe in digging to take but thin spits, and be careful to break all clods, that the roots may have full liberty to run down long and straight; for if the earth be not well divided or separated, the roots are apt to grow both short and forked.

The seeds may either be sown broadcast all over the surface, or the ground may be previously divided into beds four or five feet wide. In either method, however, sow the seeds thinly with an even hand, and rake them in; but, previously to raking, observe, that if the ground be quite light and dry, the seed may be first trodden in evenly, in doing which take care to tread it lightly and regularly, pretty closely together, then let the seed be raked in moderately. In sowing these seeds, however, it will be proper to observe, that when the ground has a disposition to be wet, or is apt to bind, it will be proper in that case to divide it into beds, four or five feet wide, with narrow alleys about a spade wide; then sow the seed. The ground, however, must not be trodden, but the seed must be raked in regularly, taking particular care not to draw the earth in heaps. The seeds have numerous forked hairs on their borders, by which they adhere, and, therefore, previously to sowing, they should be well rubbed between the hands, and mixed with dry sand, in order to separate them as much as possible; they are also very light, and therefore a quiet, still day should be chosen for sowing. The seed ought not to be more than a year old, and is often bad.

The plants as they rise should be kept clear of weeds, and when two or three inches high they should be thinned out at intervals of four inches, and again, at different thinnings, to distances of six, eight, or ten inches. The produce of these latter thinnings will supply the table, until the main crop be taken out late in Autumn (1st Nov.) In taking them up they should not be broken nor wounded with the tools employed for that purpose: their tops should be cut off about half an inch above the root: they may be stacked in a shed or spare house, in dry sand, laid in layers of roots and sand alternately, or they may be stored in the open ground, protected from the severity of winter by a covering of straw over the earth.

For the early crop, the early Horn sort is preferable, but is small, and not so profitable as the long Orange, which is better adapted for the main crop.

Cauliflower.—The season of sowing for Cauliflowers to be eaten in the spring, is about the time directed for sowing early cabbage, namely: early in autumn (15th Sept.) The best method for preparing the ground is to open small trenches, and to dig in lightly some fresh earth in good compost to receive the plants. When the plants are a proper size they should be pricked out in a careful and regular manner, and the spot should be one of the warmest in the garden. The cauliflower being a very tender plant, it is almost useless to attempt to rear them, unless there be glass to put them under in very severe weather. They, however, should not be covered until the weather demands it, and, in the mean while, the hoe should be frequently used between them, and by that means the earth kept as dry about their stems as the season will

permit. In very severe weather they must be covered, but never any longer than is absolutely necessary, for too much covering and too much deprivation of air make them weak, and disqualify them for bearing. From these beds they may be planted out in rows, like cabbages, only at rather greater distances, and taking care to move a little earth along with them, about the middle of spring (1st to 15th April). In the south they may be planted out late in autumn, in clumps, of three, four, five, or six in a clump, and there stand the winter, covered by hand-glasses, which are taken off when the weather is fine, and raised up at the bottom by the means of bricks, to prevent a drawing up of the plants. Towards spring, that is to say, in the month of February or March, the weakest of the plants in each clump should be taken up and planted elsewhere. As the dry weather approaches, the earth should be drawn up round the clumps, so as to form a dish for each, and when the heads begin to appear, water should be poured into these dishes, for the flower is greatly improved by abundant watering; in fact, it ought never to be neglected.

To have Cauliflowers in the autumn, the seed should be sown in the middle of spring (15th April). These plants should be transplanted into rows two feet or two feet and a half distant, the plants being from eighteen to twenty inches apart in the rows. The cauliflower is at the best an uncertain vegetable in this climate, and the only mode of culture in which success may be relied on, is in hot-beds, where the temperature most congenial to them can be secured by artificial means.

Celery.—Very early in the spring (1st to 15th March), if the frost is out of the ground, prepare a small bed of light rich earth, in a warm sheltered situation, in which the seed must be sown for an early crop. Break the mould very fine, as the seed is small, and rake the surface even; sow the seed, but not too thickly, and cover with light rich mould, about a quarter of an inch deep. The plants should be kept thin in the seed bed, and pricked out when fit upon a surface of fresh earth, well manured. They should be watered and shaded until they take root; and, in drawing from the seed-bed, let some of the strongest plants remain, to be put out for an early drill. They should be planted out before they become too strong; and, if they have acquired a large ball of earth and roots, these and the straggling leaves on the sides should be cut away, in part, before planting out to remain.

Trenches must be made early in summer (20th June) for the early, and a month later for the main crop, at four and a half or five feet distance, a foot broad, and a foot deep. At the bottom lay four inches of well-rotted dung, digging it in, or placing over it a covering of three inches of rich earth, raked even, in which the plants, now about six inches high, must be planted, six inches apart, taking care to remove all side-shoots. In hot weather, the plantation should be made in the evening, and a liberal supply of

water be administered. When the sun is powerful, they should be shaded until they take root, which will assist in keeping the soil moist.

As the plants begin to grow, hoe them on each side, and between them, with a small hoe; and, as they further increase in growth, proceed to earth or blanch them; in doing which, the soil to be used should be in a pulverized state, and prepared properly with the spade. The stalks of the outside leaves should be kept close up, to prevent the earth from getting between the stems of the outside leaves and the inner ones; for if it be allowed to get there, it checks the plant and makes the Celery bad. A little earth may be added every week or ten days, accordingly as the crop advances, always leaving about six inches of the leaves above the surface of the soil. Particular attention should be paid in earthing up that the soil be dry, otherwise it is apt to rot the plants, and render them unfit for use.

For the autumnal crop, the white is superior in flavour, but the red is said by some to be better calculated for standing through the winter. If long and hard frost be apprehended, a quantity of Celery should be taken up, and laid in a bed of sand or light earth, in a shed or cellar; for when the ground is deeply frozen, it is sometimes impossible to get it out without tearing it to pieces, and it may be kept very well for several weeks in a cellar.

CHIVES.—Chives are used by many, both in the kitchen and in salads, and are a substitute for spring onions. They will grow almost in any soil, and are easily propagated by offsets. They may be planted in rows eight or nine inches asunder, and four or five in the row. Any time early in the spring will be proper for planting.

CORN, INDIAN.—This vegetable belongs more properly to the farm than garden, but as it is very generally used in this country in a green state as a culinary dish, it may not be out of place to rank it with the kitchen vegetables. The varieties are more numerous than needful. For roasting ears or boiling, *Adams' early*, *sweet* or *sugar*, and the *early white flint*, are perhaps as good as any: the first named is cultivated because of its extreme earliness; the best is probably the "sugar," which remains in a milky state until quite old.

Mode of culture.—Plant in hills three or four feet apart, permitting two or three stalks only to stand in each hill, at intervals of two or three weeks, from middle of spring (15th April) to middle of summer (15th July); if the ground be not very rich, add a shovel-ful of decomposed manure to each hill, especially when intending to plant the sugar variety, which seems to demand stronger land than any other; digging or deep hoeing, where the plough is inadmissible, will prove useful, and when the stalks have risen two or three feet, the lateral or side shoots, termed suckers, should be taken off.

Corn Sallad, Fetticus or Lamb's Lettuce.—This plant is a native of England, and is cultivated in the gardens as a sallad, it is sown early in autumn (15th Sept.) either in drills or broad-cast, the former is the better plan, as the crop may more readily be kept free from weeds, and gathered for use. Late in the autumn give a slight covering of straw; and should the winter not prove unusually severe, it may be had throughout it and the spring. It is generally brought to table mixed with scurvy grass, which is highly pungent, and corrects the tame flavour of the Fetticus.

Cress.—A small quantity should, in the salad season, be sown every six or eight days, for it should be cut before it comes into the rough leaf. It is sown in shallow drills, and covered slightly with very fine earth. The common garden Cress is generally not cut till the fourth or fifth leaf has made its appearance, but the curled Cress will remain good for a considerable length of time, if the outside leaves only be picked off, as it will soon produce more, and in this respect bears a great similarity to parsley.

One ounce of seed will be sufficient for a bed three feet broad and five feet long.

Cucumbers.—For an early crop for table use, start some plants in pots middle of spring (15th April) and when all probability of frost is over, set them out on a well sheltered border, in hills, with a spade-ful of well rotted manure incorporated with the soil of each hill; at the same time the seed, for a succeeding crop, may be planted. For pickles plant middle of summer (20th July). The early frame is the best variety for table use, and the long green for pickling. The Cucumber, like the squash, is liable to be preyed upon by yellow bugs, which are very destructive; to counteract them prepare a mixture of air-slacked lime and wood ashes, which sprinkle freely over the leaves and stems whilst the dew is on, that it may adhere.

Cucumbers for forcing, are sometimes sown as early as mid-winter, or earlier by the market-gardeners, but this is very hazardous; such as are grown in boxes and lights, and will succeed without linings, are sown from the middle of March to the middle of April; and somewhat later, seed may be sown for putting under the hand-glass. Cucumbers, sown in the middle of March, require stronger beds than those sown a fortnight or three weeks later. Let a trench be dug the size of the frame, about eighteen inches deep, and if the soil is light and rich that is drawn out, the bed may be formed of it; but a strong loam will not be available. Make the bed even, and tread it down well with a fall of about six inches from back to front; place on the boxes and lights, and when the heat rises, admit one or two inches of air. In about a week put in about a barrowful of mould to each light, for the hills. The mould must be levelled about an inch all over the bed to prevent the rank steam injuring the plants. The next day ridge out the

plants, press the mould close round the roots and apply a little water, sprinkling a little regularly all over the bed; admit plenty of air both night and day until the bed becomes perfectly sweet, after which the frame may be closed at night.

The hot-bed for cucumbers requires a stronger heat than that for melons, otherwise the management is similar to what will be hereafter directed in the culture of that plant. The seed for the cucumber should be at least two years old, as new seed is more productive of vigorous shoots than much fruit.

Particular care is requisite in the culture of the late cucumber, to prevent the canker; the best method is, to keep the plants thin of vine, and never water later than three o'clock in the afternoon, that the vines may dry before night, and always apply soft water.

When you ridge out the plants, put two in small lights and three in larger ones; when the roots appear through the hill of earth in which you have placed them, add more mould, and when they have been ridged out about a fortnight or three weeks, it will be necessary to mould them up fully. Care must be taken to stop the plants, by removing the eye or bud carefully with the nail or a knife at the second joint when they have made two rough leaves, and then let them run six joints, stopping them again, when they will generally show fruit if properly attended to. Do not let more than one fruit swell on each shoot, which will thus be very fine. Nothing is more important than laying the plant in a proper manner. This should be attended to every fortnight or three weeks after the plants have come into bearing; if the laying is continued in a regular manner, good fruit may be obtained until the crop from the open ground is fit for use. After the plants have been ridged out a fortnight, it will be necessary to shut them down in the afternoon. They will however require air in the night, generally till the fruit is cut, even though the weather be mild, or they are liable to change colour and gain a yellow cast in a strong heat.

Cucumbers under Hand-Glasses—May be sown from the first to the middle of April, and the plants may be brought forward in the early cucumber or melon beds. When they are potted, place three in each pot; do not fill the pots more than three parts full, as they are very liable to draw up long in the stem; merely cover the roots with mould at first, adding a little more a day or two afterwards; and in about a week fill the pots to the brim. Give them as much air as possible, and place them at the back of the hot-bed as near the glass as convenient; supply them wel with water, and stop them at the second joint; they will thus become strong plants fit for the hand-glass, in three weeks or a month at most. They must then be ridged out in a light rich earth.

If you have a piece of disengaged ground, two or three months before you want it for the cucumber bed, mark it out six feet wide, putting in six inches of dung or leaf mould, laying it up in ridges of two feet six inches in width, and a foot in depth; when wanted,

level it down and dig a trench three feet wide for the dung, leaving it nine or ten inches deep, taking care to leave it a little higher in the middle where the dung is placed; then mark out six feet wide beds for each, and three feet alleys; afterwards place the line to the middle of the ridge, and mark out three feet six inches, which must be the distance from the centre of each glass. Take out two spades-ful of the mould, level it on the ridge, and put one spade-ful of light rich earth in its place for the purpose of receiving the plant when you turn it out from the pot. If the hand-glasses are large and the plants have been properly stopped, the fruit will be ready to cut early: do not suffer them to run to too much vine, six joints are quite sufficient at the first, and afterwards always stop them at the first or second joint. Let them be kept under the glasses as long as possible without injury, admitting air in the day-time by means of a wooden wedge, and before placing the vine outside the glasses, it will be necessary to admit a larger quantity of air, both night and day, for three or four days, to harden the plants. Lay out the vines regularly, peg them down, and raise the glass to the south by means of a piece of stick about a foot in length, with three notches cut in it, about two inches apart, for the purpose of resting the glass upon. The ridges must always front the south.

Egg Plant or Melongene.—This vegetable is a native of Africa, hence the name Guinea Squash, by which it is designated among the slaves of the south. Of late years it has become of very general use, and large numbers of them are grown for the supply of the Philadelphia market; they are used in stews and soups, but are usually cut in thin slices and fried. The original species is *white*, but the varieties most cultivated, are the *smooth-stemmed purple*, and the *prickly stemmed purple;* both grow large, and are equally good; but the smooth stemmed is the earlier. To have them early it is requisite to sow them in a hot-bed, very early in the spring (15th March), transplanting them into another when they attain the height of three or four inches. In the second bed they may be planted in rows, at the distance of four inches, or may be put in small sized pots, one in each, and the pots plunged up to the rim in the mould. This latter plan is preferable, as the roots are not disturbed at the final transplantation. They should not be put out in the open ground before the weather becomes mild (middle of May), because the plants are very tender, and should they even escape frost, may become stinted from long continued cool weather. Those who have not the convenience of a hot-bed, may sow in pots or boxes, middle of spring (15th April), keeping them in a south window: or may place them in a frame, without dung, covered by sash, carefully sheltering them from frost and cold winds. When about to plant them in the open ground, choose a well cultivated spot, and if not rich, or even if in good condition,

add plenty of thoroughly rotted stable manure; allow the plants three feet space each way.

ENDIVE.—The principal season for the sowing of Endive is about the middle of summer (20th July); if sown much earlier, it generally runs off to seed. Make a bed very fine, and sow the seed in drills at eighteen inches apart, and about half an inch deep in the drill, the earth being pressed down very closely upon the seed. The plants, which will be quickly up, must be thinned as soon as possible to eighteen inches in the row, and thus they will stand throughout the bed at eighteen inches from each other. Endive may be transplanted, but it does not transplant so well as lettuce, and the plants are never so fine as those which remain on the spot where they were sown. When the plants have attained something like their full size, they must undergo the process of blanching, which is performed as follows:—gather the whole plant up in your hands in a conical form, and then tie it round with matting, which is to go several times round the plant, causing it to end so pointedly at the top as to prevent the rain or dew from penetrating to the interior. Particular care must be observed, in blanching the plants, that the leaves are all dry, otherwise corruption is apt to ensue, and the plant entirely spoil. The great difficulty in the case of Endive is to have it for use in the winter, for, though it is hardy enough, it will rot, if it stand tied up too long. A good method is to take up the roots, with balls to them, late in autumn (1st Nov.), when they are perfectly dry, and then planting these balls in sand or earth in a shed; but on this plan you can hardly make the plant last for use beyond the middle of December. The only effectual way to have Endive in winter, is to cover them with glazed frames in the fall of the year, or with hoops and mats, taking all covering off in mild weather, just protecting the plants from hard frosts, and proceeding with bleaching and cutting for use as previously directed.

ESCHALOTS may be planted early in the spring (15th March, or earlier, if the frost admits), if they have not been planted in autumn, which is the best season for that operation. They require a good, rich, light soil, and an open situation. Choose a piece of dry ground which has been manured for the preceding crop, as they are apt to canker, and be infested with maggots, if planted in fresh dung. They may be planted in rows one foot apart, and the roots nine inches distant in the lines. If necessary to manure the ground, we have found the dung of pigeons or poultry the best, and least liable to breed grubs. Let the tops appear over the ground, and, early in June, take all the earth away from them with the hoe, leaving them quite bare, which will cause them to bulb well, and in a great measure prevent the canker. When the tops begin to turn yellow, the roots should be taken up, and dried in the same manner as garlic and onions.

Horse-radish.—This plant is propagated by cuttings; procure a number of proper sets, which may be either the small offsets that rise from the bottom or sides of the main roots, and of which take cuttings of their tops, two or three inches long; or use the tops and crowns of the old roots, when taken up for use, in cuttings of the above length. Being thus furnished with a proper number of sets, trench the ground to the depth of two feet, and add a slight body of manure; plant the sets with a spade or large dibble, rake the surface smooth, and sow it with spinach, if that should be wanted. As Horse-radish is a coarse-growing vegetable, it would be advisable to plant it in some part of the slip, or outer parts of the garden, where it may be seen as little as possible; nevertheless, plant it in a situation where it will not be under the shade of trees.

In taking up these roots, it should be done regularly, not taking up a stick or root here and there, as is often practised in private gardens, but beginning at the first row, and proceeding from row to row, as it is wanted.

Leeks.—This is a vegetable which for certain purposes is preferred to onions. The time for sowing is as early in the spring as the weather and ground will permit (say 15th March). Sow in little drills, made across a bed of fine earth; put the rows eight inches asunder, and thin the plants to three inches apart in the row. Keep the ground clean by nice hoeing until the middle of summer (20th July), or thereabouts; then take the plants up, cut the roots off to an inch long, and cut off the tops of the leaves, but not too low down; make deep drills with a hoe at two feet apart. Plant the Leeks in these drills with a setting stick, fastening them well in the ground, and leaving the drill open. As the plants grow, put to their sides the earth that came out of the drill; after that, draw more up to them on each side from the interval, and, if your ground be really good, each leek will have attained a sufficient size for use. They will stand the winter perfectly well without any covering at all; but, as a provision against hard frost, some plants should be always taken up, and put into earth or sand in a shed or cellar.

An ounce of seed will be enough for a bed four feet broad and twelve feet long; the London tall, or the Musselburg Flag, being the best.

Lettuce.—If the weather be mild and dry towards the early part of spring (15th March), the seed of Lettuce may be sown. A rich light soil and an early warm spot are to be chosen. The brown Dutch, the early Cabbage, the white Cos, and green Cos, are the kinds most proper for this sowing. Let the seed be sown rather thickly; let it be lightly covered, and raked in smoothly and neatly: the seeds must not be trodden nor beaten in. When the plants come up, thin them quickly to four inches apart: when they

have attained the height of about four or five inches, leave one and take up two throughout all the rows, and then hoe the ground nicely between the remaining plants, having previously made another bed to receive the plants thus taken up; plant these in rows across a bed, the rows fifteen inches apart, and the plants fifteen inches apart in the row. To have Lettuces to eat in the winter, they must be sown in autumn (15th to 20th Sept.), in the natural ground, and in December they must be taken up without much disturbance of their roots, and put into a pretty good hot-bed made for the purpose, the mould for which ought to be eight inches deep at the least. They should be watered a little at planting, and stand nine inches apart every way. They should be shaded from the sun for a couple of days, and then have as much air given to them constantly as the weather will permit. Rotten leaves and putrified matter of every description should be removed from them, and be kept as safely as possible from being touched by the frost. If these directions be attended to, fine Lettuces may be had by the latter end of December, as well as through the months of January and February. In order to have Lettuces early in the spring, the seed must be sown in autumn, and on the approach of winter weather the plants must be transplanted into the warmest and best sheltered spots in the garden, in beds about three feet wide, with hoops and rods placed over the beds soon enough, in order to cover them with mats in severe weather, or, instead of hoops and mats, they may be covered with a glass frame and shutter; but whatever the covering may be, it must be taken off the moment the weather will permit it with safety.

Earth-worms will be apt to draw into their holes the pricked-out plants, and snails and slugs will devour the leaves, even to the very heart, if due diligence be not used to check the depredations of those vermin. Lettuces may be sown with great advantage amongst onions, and in alternate drill with spinach, radishes, or potatos.

Lettuce may be blanched as directed for endive.

Melon.—This delicious fruit is said to have been introduced from Asia, it is now, however, reared wherever the sun is warm enough to perfect it, but in England, where the climate is more prodigal of rain than sun-shine, it is extensively cultivated by artificial heat, for which ample directions are annexed. The Philadelphia market is supplied from the neighbouring shore of New Jersey, the soil of which is of a light sand, precisely adapted to the culture of the Melon; they are there grown in fields of some acres extent, cultivated by the plough. *The mode of culture* in the garden, is precisely as directed for early cucumber. The soil should be somewhat lighter if practicable, especially for the Water Melon, and the plantations should be made apart from those of Squashes, Cucumbers, and other plants of the same family, which are peculiarly liable to hybridize. The varieties of the Cantelope or Musk Mel-

on tribe, are a dozen or more. For the supply of Philadelphia, the *Nutmeg* and *Citron* are preferred; they are both highly aromatic, and well acclimated. The kinds of Water Melon there grown are the *Black* and *White Spanish*, the *Mountain Sprout* and *Carolina*, all excellent varieties.

To force Melons, the hot-beds for the reception of this fruit must be commenced in January or February, by providing a quantity of good stable-dung to make a small hot-bed for the reception of the seed, and to raise the plants to a proper growth for ridging or transplanting out into the larger bed the next month; a cartload or fifteen large wheel-barrows, full of proper hot dung, will be sufficient, and will form a bed for a *one-light* box for the hot-bed. You must also provide the requisite quantity of good stable-dung, consisting of that formed of the moist stable litter and droppings of the horses together; it must be moderately fresh, moist, and full of heat,—dry long strawy or exhausted parts must be rejected. The preparation of the dung is a very important process; it should be turned and well shaken together every fourth day for a fortnight at least, and be kept rather dry, which will cause the bed to heat moderately and equally, and to sink little and retain its heat long. The spot selected for the hot-bed should be an enclosed well-sheltered place, open to the morning and south-sun; the surface should be covered with gravel or sand, and be made sloping to the southward. The spaces for the hot-beds are sometimes level with the surface, or are raised on a bottom of gravel or solid brick ground; and sometimes pits are made on well-drained ground, deep and wide enough for the beds and linings. Judicious management is of more importance than the disposition of the hot-bed, which may be determined by local circumstances or private opinion; but as the heat of dung or leaf-beds must be kept up by occasional linings, they are the best built on some raised base, which will save a more considerable quantity of dung, and will also allow the bed to receive more benefit by the lining.

The ground for the hot-bed must be a foot larger each way than the frame. As you make the bed, shake and mix the dung well as you lay it, and beat it down with the back of the fork as you go on, but do not tread it: for a bed which is trodden hard, will not work so kindly, and is more liable to burn, than when suffered to settle down gradually of itself; proceed thus till the bed is fully three feet high; as soon as finished, put on the frame and glass, and keep them close till the heat comes up, then raise the glass behind, that the steam may pass. You should be provided with little props for this purpose, one for each light, made wedge-shaped: one end should be three inches and a half thick, being regularly sloped off to nothing at the other end. These will readily raise the lights to any height you may judge proper, according to the heat of the bed, or the temperature of the atmosphere. Melons are sometimes raised in brick pits, covered with stone or oak, about

twelve feet wide, and two and a half deep. The length must be determined by the number of frames to be employed; the dung should be worked up in the centre of the pit, allowing a space of two feet and a half on each side, for the purpose of admitting fresh linings of dung when required. The size of the lights for early melons, should be five feet long, by three broad; but for others, they will be required six feet by four.

The most convenient mode of making a hot-bed, is to let the earth be first laid in an inclined plane of about 15 degrees, laying the dung and mould parallel with it; and the frame should also be equally high on both sides, taking its slope towards the south, from the elevation of the earth; this prevents the plants at the back of the frame being too far from the glass, and the plants and mould of the bed are regularly exposed to the influence of the sun. In order to earth the bed on which the seed is to be sown, you should have a proper supply of rich, light earth, made properly dry, composed of light maiden loam, leaf mould, and well-rotted dung, in equal proportions, which should be previously prepared and kept ready for use when wanted.

Three or four days after the bed is made, is the proper time to earth it, observing if it has settled equally, to take off the frame and glasses, and level any inequalities; then make the surface smooth, and put on the frame again, and lay therein as much of the above-mentioned earth, as will cover the whole surface of the bed, about three or four inches thick; then fill three or more small garden pots with some of the rich earth just described; place these pots within the frame, and put on the glass, letting them remain till the earth in the pots is warm. Then sow seeds in the pots according to the quantity of plants required, covering the seeds about half an inch deep; pots used for this purpose, must be perfectly clean and dry; or the balls containing the roots will not turn out well. Old seed is the best; that from ten to twenty years old is preferred.

When the seeds are sown, place the pots towards the middle of the bed, plunging the bottom part a little way into the earth, drawing up some of the mould round each pot; either at the same time or two or three days afterwards, you may sow a few seeds in the earth of the bed to have a double chance; by sowing in pots, you have this advantage—if the bed should heat too violently, as is sometimes unavoidably the case, the pots can be drawn up more or less out of the danger of the heated earth: this gives the sowing in pots the advantage over sowing in the earth of a new-made hot-bed.

Close the lights, and when the steam rises copiously, give it vent by raising one corner of the upper end of the lights, from half an inch to an inch, to prevent burning. The Melon requires a minimum heat of about 65 degrees of Fahrenheit, from the time of germination, till that of fructification, and a heat of about 75

degrees to fruit it. During January, and longer if the weather is severe, cover the lights of the melon frames every evening about an hour before sun-set with garden-mats, and do not uncover them before nine in the morning. While the strong heat and steam of the frame remains, it may be as well to cover with only a single mat in the evening for the first three or four nights, but as the heat decreases, increase the covering, being careful not to let the ends of the mats hang down far below the frame, over the sides of the bed, as that would draw up a hurtful strong steam from the dung, and confine the heat too much, causing the plants to come up weakly, and appear of a sickly yellowish hue. During the strong heat, when the mats are put on in the evening, it would be proper to raise the upper end of the lights about half an inch, occasionally, to let out the rank steam and admit fresh air, letting one of the mats hang down a little way over the open part, to prevent the external air from rushing suddenly into the frame, particularly after the plants begin to advance.

It is necessary to take great care that the earth in the pots have not too much heat, and it is requisite to examine the temperature of the hot-bed every day, to ascertain this. For this purpose, as soon as the hot-bed is made, a straight stick, about three feet long, and about one inch diameter, should be thrust into the dung in the middle of the hot-bed, from behind, to be frequently pulled out and examined, until the great heat begins to decline, and if any appearance of burning is visible on the stick, you may readily raise the pots higher above the dung, without disturbing either the seeds or plants. In two or three days after the seed is sown you may expect the plants to appear, and then it is proper to admit fresh air to them, raising the upper end of the frame an inch or two every day; place a little water in a watering-pot within the frame all night, and if the earth in the pots appears at all dry refresh it by watering with some of this chilled water at about noon, or a little before, putting the water principally about the roots of the plants, by no means wetting the tops; this done, close the glasses for about half an hour, or an hour, and then open them again for a little time, then shut them close towards the evening, and continue to cover the glass every night with garden-mats. When the heat is moderate the glasses may be shut close every night, admitting fresh air, sun, and daylight every morning, and be careful to admit fresh air at all opportunities in the daytime, or the plants will become very long and weak. On the first day the plants appear, sow a little more seed in the same bed, repeating this three times; for as these plants are very tender, it is desirable to have some more seed coming forward, lest those first sown should fail. When the plants are three or four days old, they should be planted in small pots, which should be filled, the day before you intend to remove the plants, with some rich dry earth, and set within the frame till the next day when the earth will be warm; then take the plants

up in the seed pots, raising them as carefully as possible, keeping the roots entire, and with as much earth as possible adhering about the fibres. The earth in the pots, which are to receive the plants, should be formed a little hollow, for a small depth, and the plants must be placed in the hollowed part of the earth slopingly, with their roots towards the centre. The roots and stems must be covered with earth about an inch thick; one or two plants only must be placed in each pot, and if the earth be quite dry, give each plant a very little water, at the roots only; then plunge the pots into the earth on the bed close to one another, and fill up all the spaces between them with earth, and let every part of the bed within the frame be covered with as much earth as will prevent the rising of the rank steam immediately from the dung which would kill the plants. That the seedlings may be moved with more safety, it is a good plan to place small nobules of rotten dung on the surface of the seed-pot, on each side of which lay a single seed and cover it up, the roots will fix themselves on the dung, and will thus be easily removed. The plants will have taken root in two or three days after planting, if the bed be in good condition, and it is sometimes effected in twenty-four hours. When they are rooted, if the earth appears dry give them a little slightly warm water in the warmest time of the day, and if the sun shines, so much the better; repeat this watering very moderately, as the earth in the pots becomes dry, and always use soft water which has stood within the frame a few hours.

While there is a brisk growing heat in the frame, and in order to preserve it as long as possible, apply some outward protection, such as long stable litter, straw, waste hay, or dried fern, round the sides of the bed, raising it by degrees round the outsides of the frame, to defend from cold piercing winds, or driving rains or snow, which would otherwise chill the bed and give the plants a great check. If a lively heat remains, you may admit air to the plants every day to strengthen their growth, by tilting the glasses in proportion to the heat of the bed and temperature of the external air, but when there happens to be a sharp wind it will still be advisable to hang a garden mat from the upper part of the glasses, so as to fall over the part that is left open to admit the air; let it be supported or hang a little hollow from the frame, and thus it will prevent cutting winds from entering immediately; but in calm moderate weather this is not requisite. In about a fortnight after the bed is made, carefully examine if the heat begins considerably to decline, and if this should be the case, remove the temporary protection of straw, hay, or fern, if any has been laid, and replace it by a lining of fresh prepared horse-dung, close to one or both sides as it may be necessary, as a regular degree of internal heat must be supported to resist the external cold, and continue the plants in a proper state of advancing growth. If the heat has not greatly subsided, it is advisable to line only one side, first applying the

dung to the back of the bed, and in a week or fortnight after line the front, &c.; form the lining from twelve to eighteen inches wide, raise it very little higher than the dung of the bed, lest it throw in too much heat to the earth and the roots of the plants; the top of this fresh dung should be covered with earth two inches thick, to preserve the heat and prevent the rank steam of the new dung from entering the frame, which would prove destructive; this lining will greatly revive the heat of the bed, and keep it in good condition a fortnight longer. At intervals of ten or twelve days, proceed to treat the remaining side and ends of the frame in the same manner; after applying these successive linings, if the weather should still continue very cold, wet, or snowy, it may be advisable to lay a quantity of dry long litter all round the general lining, which will protect the whole from driving cold rains and snow, and preserve the heat of the bed at a fine growing temperature; be careful, however, not to draw up the steam of the lining into the frame by this covering, and do not allow the covering-mats to extend over it. By applying these linings of hot dung in due time, and by renewing them as there shall be occasion, you may preserve the bed at a warm temperature for a sufficient time to keep the plants in a fine growing state, till they are of a proper size for ridging out into the larger hot-bed, where they are to remain to produce their fruit. When the plants have advanced in growth with their two first leaves about two or three inches broad, and they have pushed their two first running-buds in the centre, or are a little advanced in the formation of one or two short runners, they are of a right size for ridging out into the large hot-beds, which will generally be before the end of February. To strengthen the plant and promote the growth of fruitful runners, each plant must be stopped, as the gardeners term it—that is, the top of the first advancing runner should be pinched, or cut off, close to the joint.

This operation should be performed when the second rough leaf is about the breadth of a shilling; you will then see, in the centre of the plant, at the bottom of this leaf, and as it were inclosed within it, the end of the first runner like a bud; this must be taken off close, either with the point of a knife or scissors, or else pinched carefully off by the fingers, taking care not to wound the joint; this will strengthen the plant, and in about ten or twelve days it will send forth two or three runners, which will probably show fruit at their second and third joints; but if the first or main runner was not stopped, it would run perhaps two feet without throwing out any more runners, or showing a single blossom; and when the lateral shoots have three joints, and do not show fruit at either of the joints, it will be proper to pinch off the tops of such of the shoots also at the third joint, to promote the putting out a good supply of new shoots, some, or all of which, will most probably be fruitful.

In ridging out Melons, it will be proper to be provided by the

middle or latter end of February with a large hot-bed, in which the plants are to remain. You will require a sufficient quantity of fresh horse-stable dung, which has laid some time, but moderately fresh, abounding in a good moist steamy heat, taking the short and long dung together as it comes; making the bed three feet and a half high, and for that size the proper quantity is one tolerable cart-load to every *light*. Begin the bed, by shaking some of the longest dung into the bottom, then fork it in equally on every part, and beat it down with the fork as you go on. In this way let the bed be carried up nearly three feet and a half high. When the bed is finished, put on the frame or lights to defend it from wet, and to bring the heat up the sooner; the upper end of the *lights* must be tilted a little, to let the steam escape. When the bed has been made a week, if it has settled down unequally, take off the frame and make the bed level, putting on the frame immediately afterwards to remain. When you find that the violent heat has subsided, but not before, put in the earth—the proper kind employed for this purpose should be rich and dry. When the bed is arranged, lay about half a bushel of earth just under the middle of each *light*, raising it up in a round hillock ten or twelve inches high; then let the spaces between the hillocks and sides of the frames be covered with the same sort of earth, only about two or three inches thick, while the bed is in strong heat; but, when it has moderated, it is to be raised by degrees to the height of the hills. The reason for laying the earth in little hills, and not earthing the bed fully at once, is by way of precaution against violent after-heat; as by this means it will more readily pass off in steam between the hills; thus we may venture to use the bed some days sooner than if it was earthed all over at once to the full thickness: for if the earth should burn after the plants are in, you can more readily prevent the earth thus raised up, and also the roots of the plants, from burning, by drawing the earth away from round the bottom of the hills, and supplying the places with more fresh mould; then put on the glasses, and by the next day these hillocks will most probably be warm; in that case, level the top of each a little, so that they may be about eight or ten inches thick, and then put in the plants, which we before directed to be placed two in a pot; they must be turned out of the pot with the ball of earth entire, and one pot of plants be placed in each hillock; but it would be advisable to select the strongest and most healthy plant of each pot only, cutting off the other close to the earth. In order to have the whole ball entire, give the plants a little water the day before; when you turn the plants out, place your hand on the surface of the pot, taking the stem of the plant carefully between your fingers, then turn the mouth of the pot downwards, and strike the rim gently on the frame,—the plants, with the ball of earth to their roots, will then come out clean. Make a hole in the middle of each hill of earth, place one plant (that is, supposing you have

destroyed the second plant, as just directed) with the ball of earth to the roots in each hole, closing the earth well round the ball, cover it about an inch over the top, and bring the earth close round the stem; then give a very moderate supply of water, pour it towards the outside of the ball of earth; when you have thus turned out the plants, shut the lights close down, till the heat rises again strongly, then tilt the light a little behind to give vent.

When the plants are thus ridged out, the lights must be covered every night with mats, and air must be admitted every morning when the weather is favourable, by raising the upper end of the glasses from about half an inch to an inch or two, in proportion to the sharpness or mildness of the weather, or the internal steam of the bed. The principal thing to be attended to now, is to support a constant heat in the bed, so as to keep the plants in a regularly growing state.

In a little more than a week after ridging out, it will probably be necessary to give some outward protection, of dry long litter, &c., laying it close round the sides nearly a foot thick, and as high as five or six inches up the sides of the frame, and particularly attending to it in wet, cold or snowy weather. In about three weeks or a month it will be requisite to renew the heat by fresh dung as before directed. For the first week or ten days after the plants are ridged out, take care that their roots do not get too much heat, by examining the bottoms of the hillocks at times, drawing away a little of the earth below; and if any burning appears, remove the burnt earth and replace it by some fresh, draw some of the earth away round the hills, and let these be kept so narrow that they will only just support the plants, and continue them so till the danger of their burning is over, then put the earth back again. When the heat abates or the roots of the plants begin to appear through the sides of the hills of earth, lay some fresh, light and rich earth that has previously lain a night in the frame against the sides, all round them, and again in three days you may lay some more of the same warmed earth; in three or four days after that you may earth the bed all over to the full thickness, that is, make it all equal with the tops of the hillocks.

The plants must be trained, as they advance in growth, in regular order: cut out very weakly vines and thin those which are crowded. Some seed may be also sown to supply any accidents, and when fit to prick out, the plants may be placed in small pots as before directed, and plunged in the back part of the bed.

Melons, which are designed to continue under bell or hand-glasses, must be sown in the hot-bed in the latter part of March, and they will be ready for ridging out in the latter end of April, or beginning of May.

When the Melons are about setting their fruit, they must be watered very sparingly, as much humidity retards the setting, and prevents the fruit from swelling freely. Let decayed flowers and

damaged leaves be taken off as soon as they appear. As the spring advances it will be proper to shade the plants for two or three hours during the greatest heat, with a thin mat or a little loose hay strewed thinly over the glasses. The male flowers are sometimes erroneously called false blossoms, but they are essential to the growth of the fruit, as these flowers contain the farina, without being impregnated with which the infant fruit turns yellow, withers and drops off. Therefore it is of importance to preserve a sufficiency of male blossoms. Covering over the glasses with mats must be continued at night till the end of May or the middle of June, according to the season.

In May the fruit will begin to set, and it then requires particular care, principally to keep up a regular supply of heat by occasional linings of hot dung, which must be continued for some time after the fruit has begun to set, for cold winds and cutting nights are common all through May, even when there has been very warm days, and these must be guarded against. Once a week or ten days will generally be found often enough to water the Melons, as too much moisture chills them and prevents the fruit from swelling. The Melon plants under bell or hand-glasses, are managed in every respect the same as those in a hot-bed, except that they are ridged out later, and produce their full crop of fruit about August or September. When any of the plants have filled the bell or hand-glasses, the runners must have liberty to escape from under them, but they must not be permitted to do this before the middle or latter end of June. When the vines are trained from under the hand-glasses, it would be advantageous to place oiled paper frames over the beds, first removing the hand-glasses. Let the paper frames remain over them night and day, and admit the light and heat of the sun when available.

When the weather happens to be very wet in July, which is frequently the case, the Melon plants must be carefully preserved from the effects of this humidity. Those in frames are easily protected, but those under bell or hand-glasses will require particular attention.

A second crop of Melons may sometimes be raised from cuttings taken from the extremities of the shoots which show the most fruit. These cuttings should have two advanced joints, prepared by taking off the two largest leaves at the bottom. Insert these cuttings in pots, placing two in each pot; water and plunge them into a hot-bed; keep the frame close and shaded; in a week the cuttings will have struck. The old Melon plants with the soil in which they grew are now to be cleared out of the frame, fresh soil is to be put in, and the bed well lined; the cuttings are to be treated precisely like young plants. When they have pushed about four inches, stop them, and fresh runners will be produced, which will bear abundantly.

In dry weather Melons are very apt to be infested with an insect

called the red spider, and you may observe symptoms of their presence long before they are visible to the naked eye. Whenever you observe the leaves curling and cracking in the middle in fine warm sunny weather, you may water them all over the leaves from a watering-pot or engine about six in the morning, and about eight o'clock, shade them with mats, if the sun shines, keeping the frame shut close till about eleven; then admit a small quantity of air, letting the mats remain till about three in the afternoon, when they should be taken off. Shading with mats will prevent the leaves from being scorched by the sun while they are wet. If the wind be south or south-west, you may water them again about three in the afternoon, shutting them up close to keep the heat in: this will cause a strong exhalation and destroy the spiders, as they by no means love moisture. When watering, throw as much as possible on the under sides of the leaves, as it is there the insects generally lodge; the vines may be gently turned for this purpose, taking great care not to hurt them; the water must be thrown on in a gentle shower, so as not to wash up the mould on the plants: at the same time throw plenty of water on the lights and sides of the boxes. When you have done watering, lay the vines gently down again. If it be sunny, let the mats remain on till the leaves are perfectly dry, admitting air according to the heat of the day. These insects may also be killed with the fumes of sulphur, urine, &c., raised from a flue, or boiling hot liquor in a vessel. When old frames and lights are used, they must be washed well both inside and out, first with clean soft water, and then with soap suds and urine mixed, using a brush or woollen rag for the purpose. This will kill the eggs of the spiders and other insects that may have been deposited the preceding season.

Mushrooms.—At the close of summer (20th Aug.) take some stable-dung that is not fresh and fiery, or, if no other can be procured, mix with it an equal quantity of old hot-bed lining; turn and mix them well together, and throw it up in a compact heap to ferment. As early as possible in September, when the dung is sufficiently fermented, and has lost all the disagreeable effluvia, mark out a bed in any dry, warm situation. Three or four feet will be quite wide enough. The length must be regulated according to the quantity of Mushrooms which it is intended to grow. A shed with a southern aspect, or at the back of hot-houses in which fires are kept, would be a very eligible place for a bed. The dung must be well shaken up, and if it be long, it must be beaten well, only it must be kept drawn in by degrees, until it assume the shape of the roof of a house: it must not only be beaten at the top, as it is gradually carried up, but it must be particularly beaten at the sides, for it is there that the bed must be perfectly even and firm. Having in this manner finished the bed, it must be protected not only from the rains, but from the sun, by covering it over with long straw, old thatch, or moss, for the bed must be neither too wet nor

too dry. It must remain in this state for about a week, or until the fermentation has moderated to about blood-heat. Then put on a layer of strong, rich, fresh mould, about two inches thick, in which some holes must be made about eight inches apart every way. Into each of these holes put some little pieces of spawn of Mushrooms, which must be covered over with a layer of mould about an inch in thickness, and beaten down smoothly with a spade. The covering of straw or matting must still be kept over the bed, for it must not be exposed immoderately to either the sun or the rain. Success now greatly depends upon the proper moisture of the bed. If in summer-time, the covering must now and then be taken off, to admit of gentle showers falling upon it, or, if in a very dry season, it should be gently watered with luke-warm water. The spawn should be dry, with a pleasant smell, like a good Mushroom; not advanced into white threads, similar to the spawn which is collected in the fields, but having a small spotted whitish appearance. In a month or five weeks, the young Mushrooms will begin to appear, when, if the clay appears dry, and the weather mild, a liberal supply of tepid water should be given. In fine weather, the covering should be taken off for a few hours, which has a tendency to keep the bed in a healthy state, but, should the weather be cold, a few minutes will be sufficient.

The covering must in all cases be regulated according to the temperature of the atmosphere, being increased or diminished from three to eighteen or twenty-four inches.

The following is the method of making Mushroom spawn: In June or July, to any portion of fresh horse-droppings, mixed with short litter, add one-third of cow-dung, and a small quantity of mould to cement it; mash the whole into a thin compost, and spread it on the floor of an open shed, until it becomes firm enough to make flat square bricks, which being done, set them on edge, and frequently turn them until half dry; then with a dibble make two holes in each brick, and insert in each hole a piece of good old spawn, the size of a walnut; the bricks should then remain until they be dry. This being completed, level the surface of a piece of ground, if the floor of a shed or house be not convenient, three feet wide, and of length sufficient to receive the bricks, on which lay a bottom of dry horse-dung, six inches thick; then form a pile, by placing in rows the bricks one upon another, the spawned side being uppermost, until the pile be three feet high; next cover it with a small portion of warm horse-dung, sufficient in quantity to effuse a gentle heat throughout the whole. When the spawn has spread itself through every part of the bricks, the process is ended, and they must be laid up in a dry place for use. Spawn made in this manner, if well dried before spring, will preserve its properties for many years.

A very ready mode of having Mushrooms all the winter is, by taking the earth of an old hot-bed, turning the dung, and, if without

heat, adding some fresh stable-litter. Let the frame and glasses be replaced, and the bed is fit. Spawn it, and, to insure a good return, add linings of hot dung, but be careful not to over-heat. As the weather becomes cold, cover the bed and glasses with hay, but admit air and light when it permits. Soft dry hay is best next the earth. Be careful not to give too much water, particularly in the winter months, to avoid chilling the beds.

Mushroom beds may be made in October, November, and December, and, if necessary, in the spring.

MUSTARD.—The seeds of Mustard soon vegetate in almost any temperature, and will arrive at perfection in any light soil. Rotten tan and vegetable mould are most generally used for this purpose, upon which the seeds are sown rather thickly, and sometimes covered with half an inch of the same sort of mould, or left uncovered: by the latter plan, they are less liable to be gritty, or have earthy particles mixed with them which are not easily washed out. There are two methods of procuring this wholesome salad, viz. natural and forcing:—the former consists simply in making a shallow drill, in which the seed is sown, and then covered with a light, thin layer of fine mould, due precaution being taken to protect the seeds from the ravages of the birds. Water is indispensable for the vegetation of this seed. For the forcing of mustard and cress, boxes of about four or five inches deep, one foot broad, and of any convenient length, are used, which are potted with any light mould, and placed over the flues, or in a slight hot-bed. The seeds are sown in them, and well watered; in a few days the salad is fit for use: one box of the above size sown with Mustard, and another with cress, will produce enough for any ordinary family for three days. Where the consumption is great, or where there is not the convenience of hot-houses, these salads may be produced in hot-beds put up purposely of dung and leaves: along with them may also be sown a little chervil, rape, or any other salad plants of like habits. Cover slightly at night with mats, or other covering, when the weather is severe, but admit as much light as possible, by removing the covering early in the morning. In gathering the crop for use, whether natural or forced, it should not be pulled, but cut neatly off with a sharp knife, holding the tops of the plants in one hand, and cutting them off about half the height with the other. They should be carefully washed, and placed in a clean salad basket, but not allowed to remain longer in the water than is necessary to clear them of any particles of mould that may be attached to them; neither should they be gathered long before using, as they will lose much of their flavour by the first, and soon lose their tenderness by the second mode.

To save the seed, sow in spring in rows two feet apart; thin the plants to six inches from each other, and, when ripe, cut, dry, and thresh it. A row, three or four yards long, will produce an abundance of seed for one year's successive sowings for a family.

NASTURTIUM may be sown middle of spring (15th April). either in patches or in a bed in a good soil, two or three inches apart, covering the seed half an inch. The pod, taken before the seed becomes ripe, is used for pickling. The plants should have pretty long bushy sticks put to them, and four or five of them will bear a great quantity of pods. They will grow in almost any ground, but the better the ground, the fewer of them are necessary.

ONIONS.—Onions require a rich mellow soil on a dry sub-soil, and are an exception to the general rule of never cropping the same ground successively with the same plant. In order to insure a good crop, the ground should have a deep digging in the winter, with a good supply of manure, laying the ground up as rough as possible, so as to present as large a portion of surface to the action of the frost and rain as can be done. Take the advantage of a fine day in the spring (middle of March to middle of April), when the ground is dry, to point over or slightly dig the surface, and in doing so, break the clods well with the spade, or rake the surface with a large rake, as the operation of digging proceeds. Then, when the ground is in good order, spread on it some very short and rotten dung; then rake, level and make out the beds, and tread them well, first fixing the line on one side, and then on the other, leaving the alley as free and loose as possible, in order that the earth may be in a pulverised state to cover the seed, sown pretty thick, about one-fourth of an inch deep; then rake the beds again very evenly, and beat them smooth with the back of the spade. Sea sand, where it can be procured, may be thrown evenly over the beds. Coal ashes are also frequently used, but soot is far the best. It should be shaken plentifully all over the sowing: even when the Onions are well up or half grown, it may be done with advantage.

The beds should be carefully weeded, and, when the plants are about three inches high, thin them first to three inches, and afterwards to four, six or eight inches apart. It is important, in weeding Onions with the carrot-hoe, not to stir the earth much, or raise it round the plants, which will prevent them forming their bulbs properly. When the leaves begin to lose their colour, then lay down the crop, which is done by bending the stems down flat, just above the bulb. The operation may be performed with the hand, but much time is saved by two persons with a pole, or the handle of a rake, each holding one of the ends, in such a manner as, when walking up the alleys, to strike the stems about an inch or two above the bulb. This process, which is called "laying over," is of great benefit to all crops of Onions, as the growth of the stem is thereby considerably checked, and the whole nourishment thrown into the bulb. It is particularly beneficial to the late crops in a bad season, for a stop is thereby put to the luxuriance of their growth, and they are consequently in a great degree obliged to ripen.

The proper time to take up the crop of Onions, is soon after the tops have become yellow: they must be spread thinly on the

ground, and, if the weather be rainy, it would be more advisable to remove them into a gravel walk, or to a space covered on purpose with sand or gravel, and exposed to the full influence of the sun. They must be turned over regularly once or twice a day, until they be thoroughly dried, and then stored away in any well-aired loft, barn, &c. If they be here spread thickly, they must still be turned occasionally, or they may be strung up by the tails or hung in nets. If it be not intended that the Onions should be strung, the better plan then is, before they are housed, to deprive them of the tails as well as tops.

If it be desired to have very large Onions, the seed should be sown very thickly in the spring, in a good, rich soil. At midsummer, when they will have ceased to grow, the bulbs will not be larger than a bean, and are to be kept for planting till the following March or April in rows or drills a foot apart, and from eight to ten inches between the sets. They must only be pressed a little into the ground with the finger, and no earth brought up to cover the bulb. The ground must be kept clear from weeds, by hoeing it frequently between the rows, and removing those by hand which come up between the plants, and, if any of the Onions appear likely to run to seed, the roots must be bent down as before directed. In this manner, they will grow from four to six inches in diameter.

The Yellow Strasburg, and the Silver Skin, are the kinds generally preferred. The Red, or Annual, as it is sometimes called, is a good keeping sort, and where the seed is sown with the intention of raising full-sized roots the first season, it is perhaps the best.

Okra.—The Okra is a native of the West Indies, where its green seed-pods are much used in soups and stews; it is now a good deal cultivated in this country, and its use is rapidly increasing, under an impression that its mucilage is particularly wholesome. There are two varieties, the large and the small capsuled, but no essential difference exists.

Mode of culture.—The seeds are planted latter part of spring (10th to 15th May), an inch deep, in rows or drills, three feet apart; the plants should not stand in the drills nearer than eight or ten inches, but as the seeds are very liable to rot, to insure a sufficiency it is necessary to scatter them pretty thickly. It delights in rich soil, inclining to dryness; keep them well hoed, and when pretty well grown, draw a little earth around the stems. In gathering for use, choose such as are quite tender, for if they be the least hard or sticky, they are worthless. The ripe seeds of the Okra are ground and used as coffee, and perhaps more nearly resemble the true article than any of the numerous substitutes.

Parsneps.—Early in the spring (15th March to 1st April) prepare a piece of ground by trenching eighteen inches or two feet deep, on which the Parsnep seed is to be sown. Some good ma-

nure should be spread at the bottom of the trench. In garden culture, it will be found to attain its greatest perfection in cottage gardens in chalky countries, and should be cultivated as a wholesome, nutritious food. They should not be sown later than the latter part of spring (1st May), and if in drills, which is the better plan, from four to six inches further apart than the carrot, as they require more room.

In all other respects they may be cultivated precisely in the same manner as carrots. In thinning, they should first be left in pairs, and, when six inches high, the weakest of each pair must be taken up. The hollow crowned, or sugar, is esteemed the best. In regard to preservation during the winter, and for spring use, the Parsnep stands all frost without injury, and even with benefit. All that is required, therefore, is to put up only as many as are likely to be wanted during a hard frost, and these may be stored in the same manner as directed for carrots and beets. If the Parsneps are to stand out in the ground all the winter, the greens should not be cut off in the fall.

Parsley.—This vegetable is indigenous to Sardinia, but has been known in Britain, from whence we date most of our horticultural acquirements, since 1584. There are three varieties, the plain or single-leaved, curled-leaved, and large-rooted Hamburg; the two former are used in soups and stews, and for garnishing; the latter is cultivated for its large white carrot-shaped roots, and used in autumn and winter like parsneps. It (the Hamburg) may be grown in the same way as directed for the carrot and parsnep, and preserved during winter in sand. For soups, &c. it is immaterial whether the curled or plain-leaved be used, but as a garnish the curled is decidedly preferable.

Method of culture.—Parsley may be sown either in rows or beds, middle of spring (15th April), and deeply raked. The seed does not vegetate under two or three weeks, unless previously soaked, which we would recommend being done in warm water for twelve hours immediately before sowing. During the season of growth the cultivator will of course keep it free from weeds, and the ground in a proper condition. As a preparation for a winter supply, early in autumn trim off the leaves of strong plants, which will speedily form young and tender growth, and on the approach of severe weather give a covering of straw, &c., to preserve the leaves from the combined action of frost and sunshine, which soon discolours them. If a portion of the plants, root and all, are taken up in November and laid in earth in some convenient situation, there is little doubt that the leaves would keep in fine condition throughout the winter.

Peas.—As early in the spring as the ground will admit of being tilled, Peas may be sown on an early border or other warm situation, but as much moisture is apt to rot them, and the labour be

thereby lost, observe to sprout them at that season, before planting; the method is to pour warm water over them and keep them at an even temperature for a couple of days, when the germ will start, after which there is but little danger; Landreth's Extra Early, which is unquestionably the earliest Pea known, the *true* Early Frame, and Early Charlton are the best for early sowing.

The Early Frame, if the true sort, will succeed the Landreth Extra Early in about ten days to a fortnight, and will fruit a few days sooner than the Charlton. The Charltons are not only early, but great bearers, and excellent Peas for the table, and are, therefore, equally fitted for the early crop, and forward successive crops, and inferior to few for the principal summer crops. The Hotspurs, which closely resemble the Charlton, are hardy and prolific, and make returns nearly as quickly as it, and about a fortnight before the Marrowfat. These sorts are, therefore, the best for the earlier sowings. To secure a regular supply, successive sowings should be made every three weeks during the months of March, April and May, and twice in each of the months of June, July and August. The seed should not be more than two years old, and a pint will be sufficient to sow four rows, each five yards long.

Peas are most productive in a light, but at the same time a rich soil; they may, however, be grown with care upon almost any other kind of soil, if it be well manured, when too poor or dry, and well drained, if inclined to be wet.

For the benefit of a proper exposure to light and air, the early dwarf sorts should have the drills three feet apart; and the taller kinds four feet. In a moderate sized garden, it is good practice to sow the rows of Peas from twelve to twenty feet apart, filling up the intervals with cabbages, onions, carrots, parsneps, French beans, or any summer crops. Early crops, sown on a border, if one side be bounded by a wall or close fence which may obstruct the sun, should be always in a longitudinal direction, for if sown across the border, the one end of the rows will be fit for use when the other end is hardly in flower, and when sown longitudinally, one row will be enough in narrow borders; the remaining part of the border, between the Peas and the walk, may be cropped with early cauliflower, lettuce, salads, &c., which being low growing crops, will not shade the Peas. In practising the latter system, however, the rows should run parallel from north to south, not from east to west, as each side of the rows will thus be exposed to the sun, and the crops grown between them will not be shaded by them.

Peas should always be sown in double rows, that is, two rows should be sown nine inches from each other, as by this method much ground will be saved, and they will not require more than half as many stakes as they would, if sown in single rows. The drills should be made at least three inches deep, and as level as possible at the bottom, so as to have the crop of a regular height

and size. The seed should be sown moderately thick, to allow for the depredations of insects or vermin, and having trodden it in, cover it with the same depth of soil as that taken from the drills, after which again tread the surface of the soil.

It will be important, as soon as the tendrils appear, to fix sticks along the rows, and this should generally be done, when they are about six or seven inches high. The sticks for this purpose should be from four or five to seven feet high, according to the growth of the different sorts of Peas. They should also be furnished with small lateral branches, that the plants may readily take hold without falling on the ground, and they should be prepared in a fanned manner, so that the side branches extend only the way of the rows.; for this purpose, no wood is so good as cedar-brush, which is usually clothed with side shoots, and is durable. Some advise that they should be placed on the most sunny side of the rows, at least, towards the east or mid-day sun, where the position or range of the rows admits; for the sun will naturally incline the plants that way, and they will more readily catch the sticks, which should be placed at such distances that the branches of each other may meet.

When the early crops are in blossom, the leading shoots should be stopped (pinched off), which accelerates the setting and maturity of the fruit. This diverts the growth into the pods just forming, and forwards them in a considerable degree. The time for stopping is just when the flowers on the lower part of the stalk begin to fade. The plants need not be shortened more than an inch or two. The system, however, is only applicable to early crops, as upon a large scale, it would be an endless task.

Fowls should never be allowed to enter the garden, or they will scratch up the seed; and pigeons, sparrows, and other birds must be frequently scared, or they will pull up the whole of the crop after it has appeared above the ground. But of all the enemies most to be feared, the mice are the most destructive, for they frequently devour the whole crop soon after it is sown, by burrowing into the ground for it. Traps should, therefore, be placed along the sides of the rows, with some strong-smelling bait, which may attract them from the food in the ground.

The following are the relative distances at which the most approved kinds of Peas should be sown. The Landreth's Extra Early, Early Frame, Hotspur, Charlton, and Blue Imperial, may be sown from three to four feet asunder. Bishop's Dwarf, which does not require stakes, and is a good early Pea, may be sown at two feet and a half asunder, and at two inches distant in the row. The Prussian Blue, Royal Dwarf Marrow, and Knight's Imperial Green, should be sown at four feet intervals, and the more lofty kinds, as Knight's Green Marrowfat, at four and a half or five feet intervals. It may be well to observe for the information of young gardeners, that there are many kinds of Peas named in the cata-

logues of some seedsmen, which may be classed as fancy sorts;—and there are many synonymes, the same kind being called by several different names: the varieties named herein, it is believed, are among the better kinds, both as regards quality and productiveness.

Potatos.—The best soil for Potatos is a rich sandy loam, for they will not prosper well on stiff, heavy, clayey, or wet land. Stable or cow-dung, with plenty of litter in it, is the best manure for a sandy soil, and a previous liming for land that is wet and heavy. In peat soils, without the application of lime, the potatos are frequently hollow-hearted. The middle of spring (15th April) is the time for planting for the general crop; but if a piece of ground be planted early in spring (15th to 20th March) a good crop may sometimes be obtained, without being liable to injuries from frost, which too frequently occurs with those that are planted still earlier.

The Fox's Seedling, ashed-leaved and early dwarf, but particularly the former, are the best kinds to be planted for the early crop, as they require less room than any other kinds. They may be planted six or eight in a line, and about fifteen inches between each line. If the ground be in any degree wet or damp, they may be planted in drills about three inches deep; but if it be light and dry, they may be dibbled in. The Mercer is the Potato the most cultivated about Philadelphia; it is productive, and usually of good quality; the Foxite (a distinct variety from Fox's Seedling), is most esteemed, but yields sparingly, and is on that account little cultivated.

When uncut Potatos are used for seed, all the eyes but one ought to be scooped out, and they must be planted at greater distances, in order to give room for the plants to get light and air. The eyes or buds nearest the root fibre sprout a week or more later than those furthest from it. In planting out sets, therefore, the two sorts of eyes should be planted in separate rows. Potatos for planting are always found to answer best, when procured from a different soil, as they seem to like a change of food.

When the plants are two or three inches above ground, the space between the roots ought to be well dug, to loosen the soil and encourage the spreading of the roots. When half a foot high, the earth should be hoed up to the stem, so as to cover the Potatos at the surface from the light, which turns them green and acrid, and to permit the air to penetrate to the roots the farthest spread. Another hoeing will be afterwards wanted, to keep the stems from falling down. In light soils, where Potatos have been dibbled in, edge-hoeing and flat-hoeing, without earthing up, answers best. Care must be taken not to choke the plants by drawing the earth too close, and all weeds which rob the crop of food, and shade it from light, must be grubbed up.

The withering of the plant points out the proper time for digging up the crop. If any be dug up before those symptoms appear,

they ought not to be exposed to the sun, which will render them acrid, and injure their flavour. Potatos intended to be eaten, cannot, probably, be too ripe: such, however, as are intended for seed, should not be allowed to become too ripe, as, in that case, they are more subject to the disease called the curl, which is often very detrimental to the crop. In taking up Potatos, whether for eating or seed, it cannot be denied that by far too little attention has been paid to keep each sort separate. It is necessary that they should be taken up when the ground is perfectly dry, more particularly in damp strong soils, and either housed in places for the purpose, or piled up on dry ground in a conical form, and covered a foot thick with straw, and then a foot of mould placed over it, leaving the surface of the whole as smooth as possible, the better to draw off the rain.

The curl is a disease very injurious to Potatos, and hitherto no remedy has been discovered for it. It has, however, been recommended by the Rev. Henry Cotes, of Bedlington Vicarage, near Morpeth, as a cure, to raise Potatos occasionally from seed, and the produce of the new Potatos fit for planting to be marked according to their growth from the seed. The directions herein given for the culture of this most useful esculent, apply to the garden; in farm tillage the plough and horse-hoe are used instead of the spade; and it will generally be found that the farm-land will produce Potatos of better quality than the garden. New land, or such as has been recently cleared, or old pastures broken up the preceding autumn, yield the finest crops.

Pumpkin.—This vine is seldom admitted inside the garden, owing to its ungovernable habits. When the fruit is required, it is better to depend upon the farm, or purchase, than to have more important vegetables overrun by it.

It is either planted by itself in hills, eight or ten feet apart each way, or interspersed among the crop of Indian corn, where it succeeds equally well. The varieties are something like half a dozen, but the one most esteemed for family use is the *Cashaw;* good in an unripe state as Squash or Cimblin, or when ripe, for pie or pudding.

The *Mammoth* is principally cultivated as an object of curiosity and on good ground, in favourable seasons, sometimes attain the weight of 200 pounds.

Radishes.—Early in the spring (15th March), when the weather is open and mild, sow scarlet short-topped Radishes, to come in as an early crop, on a warm border, sloping towards the sun, and under a wall or other fence; and a little later sow a crop of salmon Radishes, to succeed the short-topped. Never mix the seeds of both sorts, but let each sort be sown separately, for the short-topped will come into use sooner by a week or ten days than the salmon

Radish, even if both be sown at the same time. A little carrot seed may be mixed and sown with the Radish seed; for if the Radishes should fail, the carrots may still succeed, and if both succeed, a double advantage will be obtained, for, when the Radishes are pulled up, a crop of carrots still remains, which will come in at a very early season; or, instead of the carrots, a small quantity of round-leaved spinach and some lettuce may be sown, and when the Radishes come off, these will come in.

The Radish seed should be sown tolerably thick; for as soon as the plants begin to appear, the weather, if it should prove severe, will cut off some, and the birds also, being apt to attack them greedily, will destroy the excess. Sow the seed evenly on the surface, and either rake it in or cover it with fine earth from the alleys, about half an inch deep; observing that, if the weather should set in frosty after the seed be sown, it will be of great advantage to spread some dry long litter over the beds two or three inches thick, which will keep out the frost, and forward the vegetation of the seed.

When the plants begin to appear, proper means must be used to protect them from the frost and birds, by spreading straw, cedar brush, or thin mats, over the surface, there to continue till the plants have attained a proper size; and if the weather prove severe after the plants appear, cover them also occasionally with straw, which will be a great protection from the injury of the frost. The covering should be applied every night, when there is any likelihood of frost, but must be kept off in fine weather. The covering of early Radishes should be continued occasionally, until the rough leaves of the plants have appeared.

For the late crops sow the yellow turnip-rooted and summer white, which stand the heat better than the more delicate kinds; for winter use the white and black Spanish are used,—they should be removed to a secure place on the approach of severe weather, and in that way kept for use until spring.

For a bed three feet broad and nine feet long, one ounce of seed will be enough for spring varieties, and three quarters of an ounce for autumn and winter varieties. When sown too thick, they are apt to be woody or to run to seed. The late crops should be well watered in dry weather, or otherwise the flavour will be injured. In summer they must be sown free from the powerful influence of the sun, yet not under the shade of trees or of other crops.

Rhubarb.—The seeds should be sown in the middle of spring (15th April), in a border with a northern aspect, and scattered thinly in drills of about two inches in depth, and a foot apart, and slightly covered with soil. When the plants appear, they should be thinned out to about six inches from each other, and afterwards to a foot; and the thinnings may be planted in a similar situation,

if required, though in this case they must be taken up with care, so as not to break the roots.

As soon as the leaves are decayed, the seedling plants should be taken up with care, and planted out in rows two feet apart, and the same distance between the plants: when they are planted further apart than this, a great portion of ground will be wasted, as they are not injured by being shaded by each other. Rhubarb should always be planted in a shaded or northern situation, as their stems will be finer and better when not too much exposed to the sun. Any rich soil will grow good Rhubarb, which will require an annual top-dressing of well-rotted manure. This should be applied in the autumn, and during the winter the nutriment which it contains will be conveyed down to the roots by the rain, and it will also cause the leaves to commence growing much earlier in the spring. As seedling plants do not produce stems fit for use till two years after the time for sowing, if plants are desired to be obtained sooner than they can thus be brought into use, the old roots may be taken up, and separated into as many parts as there are crowns or eyes, leaving a portion of the root to each: these may be planted out when desired, and they will soon produce stems sufficiently strong for any required purpose.

Rhubarb may be forwarded by turning over the plants as they stand in the open ground, empty barrels or boxes, which may be surrounded by coarse litter or stable manure;—the warmth thus imparted will cause the plants to shoot vigorously. The use of the Rhubarb, for pies and tarts, is greatly increasing; many persons esteem it quite equal to the gooseberry, and by the mode of forcing it just stated, it may be had in profusion before even a leaf has put forth on the gooseberry. It is said that one cultivator near London has twenty acres occupied in its culture.

Burk's Scarlet, the Giant, Victoria, and Tobolsk, are the varieties most highly prized.

Salsafy or Oyster Plant.—This vegetable, which somewhat resembles the Parsnep, is cultivated as a substitute for the oyster, and in the interior, where the real article cannot readily be obtained, is really quite acceptable.

Mode of culture.—Sow in drills sufficiently wide apart to admit of easy culture, middle of spring (15th April), and keep the land well tilled, to encourage free growth; as it is more convenient in the preparation of this root for table, if they are of good size Many of the seeds are defective, and to secure a sufficiency of plants in the rows, the seed should be strown thickly, and if they stand too closely, thin out to the proper distance: about six inches from plant to plant. It is quite hardy, but that it may be obtained with little trouble during winter, remove the roots to the cellar, or other shelter, on the approach of severe frost.

Sea Kale.—A rich sandy loam is most congenial to this vege-

table. Trenches should be opened, as for celery, at a distance of about four feet, into which put plenty of rotten dung. Make a compost of rich earth, sea sand, or coal ashes; bog mould is also very good, and old manure, quite decomposed. Cover the dung in the trenches with the compost, and a proportion of the earth taken out to the depth of nine or ten inches, so as to have the rows raised about four inches above the level of the ground. A drill must then be drawn along the centre of each row, to the depth of nearly three quarters of an inch; drop two or three seeds close to each other, in holes eighteen inches apart; then cover the drills, and tread the ground lightly. When the plants have attained the third leaf, pull up the weakest, leaving only the best plants at the intervals before mentioned. In October or November, cover each plant with coal ashes, old tan, or bog earth, to the height of eighteen inches or two feet. They will be fit for use in March or April, when the plants may be again stripped. Plants of one or two years' growth may, with good effect, be transplanted to the trenches.

In order to force Sea Kale, fix long sticks in the ground close to each of the crowns of the Sea Kale, to mark their precise situation; then put on abundance of sifted coal ashes, rotten tan, turf mould, or light sand, whichever can be had with the greatest convenience. The crowns being thus covered, let wide and deep furrows be opened between the rows, and raise the earth, in form of a celery drill when highly landed, beating the sides firmly and smoothly: the furrows should be two feet wide at top, but not more than eighteen inches at bottom, lest by going too near the roots of the Sea Kale, they should be scorched by the heat in forcing. When the trenches are clear, and the sides of the ridges carefully made up, let good stable-dung, worked as for a hot-bed, be put in, so as to fill the furrows; and if great expedition be required, it may be raised above the tops of the ridges.

The process of blanching Sea Kale is performed in a variety of ways; the most convenient and best, however, for Sea Kale which is not forced, is to cover the beds in autumn with leaves raked up from the woods, covering each bed in thickness according to the strength and age of the plants, giving the greatest covering to the oldest or strongest roots. The covering may be from five inches to fifteen when first laid on, and over that, place a slight covering of light littery dung, in order to prevent the leaves from blowing about: this covering is to remain on until the crop be all cut, when it may be taken away, and the beds dug over; or when, from particular circumstances, this has not been attended to in autumn, or at the time the buds begin to appear, fork the beds regularly over, and cover the plants from twelve to fifteen or eighteen inches with sawdust, or rotten tan, when it can be conveniently procured; if neither can be had, break the mould on the surface of the beds as fine as possible, and mould up the plants with it. But where there are blanching pots used for the crops of Sea Kale, which have

been forcing during the winter, they may be used with propriety to blanch the spring crops. Place them over the plants, and draw a sufficient quantity of mould round their base to prevent the admission of air. Large flower-pots turned down upon them, will answer the purpose, provided the holes in the bottom of the pots be stopped: the plants will draw sufficient air for their sustenance, however well the holes may be stopped. The flowers, where the seeds are not wanted, ought to be nipped off with the finger and thumb as long as they appear, as they tend considerably to weaken the plants.

The culture of Sea Kale has been but little attended to in the United States. It is reputed to be a wholesome vegetable, not unlike asparagus when similarly cooked, and from the ease with which it may be obtained very early in the spring, is more deserving of notice.

SPINACH.—This vegetable requires a richer soil than almost any other culinary vegetable, to bring it to perfection, as it has to yield frequent gatherings or cuttings, and therefore requires a repeated development of parts, which cannot be expected without an abundance of food. The finest crops of this vegetable may be expected from ground glutted with manure, so far as the attainment of vegetable matter is concerned. The time of sowing for a winter crop, to come in from November to May, is from the middle of August to the middle of September. It will seldom survive the winter in the climate of Philadelphia, unless protected by a covering of straw, leaves, or anything else which will not press heavily on it. For an early summer crop, to come in after the winter crop has run to seed, the early part to middle of spring (15th March to 15th April) is the proper time. When sown after the close of spring, it will run rapidly to seed. The best sorts are the prickly-seeded, for the autumn sowing, and the round-seeded for spring. The seed must not be sown too thick, and may be covered one-third or one-fourth of an inch deep. It should be moderately trodden in, or beaten with the back of a spade, unless the ground be in bad order from too much moisture. Let water be given when the weather is dry; and, should the ground be very rich, the plants ought to be thinned out seven or eight inches apart. Careful weeding, and hoeing up the earth, so as not to choke up the hearts of the plants, are indispensable.

For a bed five feet wide and twelve feet long, an ounce of seed will be enough, or half an ounce for the same space, if sown in drills. For summer crops, it is a good plan to sow the seed in drills, between the rows of peas, as the latter will afford it shelter and shade, and assist much in preventing it from running to seed, besides which, the ground will thus be better and more profitably occupied.

SQUASH.—This fruit is in general use, few gardens being desti-

tute of it in its seasons; there are many varieties, but for summer use, those most grown, are the *large green*, and *early bush*, or patty-pan shaped; the latter, from its compact mode of growth, is generally preferred. The long rambling kinds are out of place in the garden, and should be planted with the potato or corn crop. There are some varieties which are in season during winter, and may be cooked, either as a vegetable dish, or prepared in pies, like the pumpkin.

The mode of culture is very simple, all that is requisite being to deeply dig patches of earth, at the distance of four or five feet each way, and incorporate with the soil a good portion of well decomposed manure; in each patch or mound of earth, plant half a dozen or more seed, and when the plants are well established, remove all but two or three of the strongest. The seed need not be planted before the middle of spring (15th April), as the squash is susceptible of cold, and will make no headway until the weather becomes mild. To have a few quite early, start them in pots in a hot-bed, or in the window.

Tomato or Love Apple.—There is no vegetable, except perhaps the potato, in more general use than the Tomato, and yet, but a few years since, it was unknown as a culinary dish to most persons in this country. Near the large cities, where high prices are paid for the earlier vegetables, great exertions are made by market gardeners to advance this fruit. The plants are usually started in hot-beds, very early in the spring (1st March), and as they advance in growth, transplanted to more roomy quarters, still under glass, and by the time it is prudent to expose them to the open garden, they have become strong and vigorous; indeed, after they are set out, shelter is still afforded in unfavourable weather, usually by small boxes, each having a light of glass in the top.

The common method of culture is to prepare the ground by deep digging (market gardeners use the plough), and incorporate into the soil plenty of thoroughly rotted manure. It is not advisable, however, that the manure should be in excess, else, though the plants will grow vigorously, the fruit will be less abundant.

It is a good plan to cover the surface of the earth around each clump, with straw or litter, which prevents rapid evaporation during the hot weather, and also keeps the fruit from injury by heavy rain. Some brushwood stuck around the plants to support them, is also useful.

Turnips.—For an early crop, the seed should be sown as soon after the frost has left the ground as practicable, for unless the roots attain their growth before the arrival of hot weather, they will, in this climate, be worthless. For the first crops, the Early Dutch, or Red Top, are the best; for autumn and early winter use, the Early Dutch, Strap-leaved Red Top, and Early Stone, are desirable kinds; for late spring use, the Yellow Aberdeen, and Swedish

or Ruta Baga, are preferable, as they do not become pithy. For these crops, the time of sowing in the latitude of Philadelphia, is about the middle of August to 1st September, except for the Ruta Baga, which requires to be planted two or three weeks earlier.

The early crops of Turnips should always have a warm aspect, and the soil should be of the lightest and driest description. Sand or gravel, with a proportionate mixture of loam, is the soil best adapted for Turnips; for if the land be heavy, or excessively rich, a rank taste is imparted to the root, and induces it too soon to run to flower. The most successful time to sow the seed is in showery weather, or immediately after rain: should it be sown in dry or hot weather, a great risk is run of a total loss of the crop.

The seed is sown either thickly broadcast, or in drills, a foot or a foot and a half apart, covering with two inches or so of earth, which should be lightly beaten or trodden down, and afterwards well raked in the same direction as the drills, and not in a contrary direction, which would disturb the seed, and cause it to come up irregularly. For a bed four feet broad and twelve feet long, about a quarter of an ounce of seed is sufficient. The operation of thinning should be performed when the rough leaves are about an inch in breadth, or at least before they attain a much greater size, as the work can then be accomplished with greater expedition and facility.

When weeding with the hoe, no earth ought to be drawn up to the roots, as this is apt to produce bulgings, or what is commonly called fingers and toes, and the leaves will afford the roots sufficient shade to preserve them from becoming green and acrid.

The winter sorts afford excellent greens early in spring, and if they be suffered to remain in the ground till the spring, with a slight protection, two or three successive crops of these greens will be produced.

A few plants of the different sorts may be allowed to stand for seed, as distant as possible from each other, or from any flowering cabbage, in order to prevent cross fertilization by the bees or wind. Transplanting Turnips is an excellent practice, so say some English gardeners, as it renders them firmer and more lasting for table use.

The culture of the Turnip is, after all has been said, a very simple process: good land, good seed, and timely sowing, being the chief requisites. It may be observed, that the later in the season the crop be put in, provided there be time for it to reach perfection, the finer flavoured and more tender will be the roots.

PART SECOND.

CULTIVATION OF CULINARY HERBS.

BALM.—This is an herb purely medicinal. A very little of it is sufficient in any garden. It is propagated from seeds or from offsets. When once planted, the only care required is to see that it does not extend itself too widely. The seed may be sown at any time during spring, and when the plants have attained the height of a few inches, they may be transplanted to a permanent position.

BAZIL, SWEET.—This herb is an annual, and requires the seed to be sown for every crop. It thrives with little attention. Sow at middle of spring (15th April), in drills, and keep the earth free from weeds, and in a state to promote vegetation.

BORAGE is a very pretty flowering plant. One sort of it has *blue* flowers, one *red*, and another *white*. The use that Borage is applied to, in England, is putting it into wine and water along with nutmeg, and thus bearing the name of a *cool tankard*—let not, however, the mention of this nectar tempt any one to test its quality—doubtless it is not half as good as an American *mint julip*, which, happily, in these temperance times, we are content to know from recollection. Having once planted it, no further trouble is required to sow it. It bears an abundance of seed, some of which is ripe while the plant is still in bloom. If it be desired to have it young at all times, it may be sown in the spring, the summer, or autumn, or indeed, at any time. The plants should not stand too thick upon the ground, and the ground itself should be kept clean. A corner in the garden, under one of the hedges, will do very well for Borage, which, however, is by no means unornamental, even in a flower garden.

CAMOMILE is a perennial medicinal herb, of great use. It may be propagated from seed, but it is most easily propagated by parting the roots. One small bit of root will soon make a bed sufficient for a garden. The flowers, which are used in medicine, should be gathered before they begin to fade, and at a time when they are perfectly dry, and then put into a shady and airy place to dry, which they will do perfectly, but not in less than a month When completely dry, they should be put into a paper bag, hung up in a dry place, and kept from all dust.

DILL is an aromatic herb, very much like, only smaller, than *fennel*, and it is used by many amongst cucumbers, to give an additional relish, as it is also in soups. It is a hardy biennial plant, and a small patch in the herb garden, of two feet by six, will be enough for any family. Sow in drills, six inches apart, in the middle of spring (15th April), first making the ground fine, and raking fine earth lightly over the drills; thin the plants out when they are a couple of inches high, and let them remain where they are: an abundance of self-sown plants will then be had every spring for renewing the bed.

FENNEL is a perennial herb, propagated from seed or from offsets, sown in the middle of spring (15th April), or the offsets planted in the fall. The plants should stand about a foot asunder. The leaves are used in salads, or for making a part of the sauce for fish. In winter the seeds are bruised to put into fish-sauce, and they give it the same flavour as the leaves of the plant. It is a very hardy plant: two yards square in the herbary will be enough for any family, and when once in the ground it will stand for an age.

HYSSOP is a sort of half woody shrub, something between a tree and an herbaceous plant. The flower spikes are used, fresh or dry, for medicinal purposes. It is propagated from seed sown in the middle of spring (15th April), or offsets removed either in the spring or autumn. A couple of plants in the herb bed will be sufficient for any family.

LAVENDER.—A beautiful little well-known shrub, of uses equally well-known, whether used in the flower, or in the water which is distilled from it. Like all other plants and trees, it may be propagated from seed; but it is easiest propagated from slips, taken off early in the spring, and planted in good moist ground in the shade. When planted out, the plants should stand three feet apart. The flower-stalks should be cut off, whether for preserving the flowers or for distillation, before any of the blossoms begin to fall off, and, indeed, just as those blossoms begin to open wide. The Lavender plant grows large, and it should therefore be cultivated in the outer garden.

LIQUORICE.—Prepare some ground to plant Liquorice where required: the ground should have two or three spades' depth of good soil, and also trenched the same depth, in order that the root, the only useful part, may run very deep into the earth.

Procure sets of the small horizontal roots, which run near the surface of the ground: cut them into lengths of six inches, and plant them by dibble, in rows a yard asunder, by half that distance in the row, placing them wholly within the earth as soon as planted: sow a thin crop of onions on the same ground the first year. Keep them clear from weeds all summer, and, when the onions

come off, hoe the ground well, and in winter slightly dig the ground between the rows.

They must be allowed to have three years' growth, cutting down the decayed stems every October or November, and in the third or fourth year the main roots will be of full length and size; then dig them up in winter, beginning at one end of the ground, and opening a trench quite to the bottom of the first row of roots; so continue, row and row, taking out all the roots as you proceed to the bottom.

MARJORAM.—One sort is annual and one perennial. The former is called Summer or Sweet Marjoram, and the latter Winter Marjoram. The Sweet, or annual variety, is the one most in use. It is sown about the middle of spring (15th April), in drills, in nicely prepared ground. The seeds are extremely minute, and of course the drill should be nothing more than a mark, to guide the hand when sowing, and the covering should be as delicately prepared as possible, merely drawing a rake lengthwise with the drill. The only culture it requires is to be occasionally hoed, to keep the earth loose and free from weeds. The Winter Marjoram is propagated by offsets, that is, by parting the roots, the plants standing pretty close to each other. As the winter sort cannot always be procured in winter, some of both ought to be preserved by drying. Cut it just before it comes out into bloom; hang it up in little bunches to dry, first for a day in the sun, then in the shade, and, when quite dry, put it in paper bags tied up, and the bags hung up in a dry place.

MARIGOLD is an annual plant; the variety used in cooking is termed the Pot Marigold, very distinct from the ornamental kinds; the seed to be sown in the spring. When the bloom is at the full, gather the flowers; pull the leaves of the flower out of their sockets; lay them on paper to dry in the shade. When dry, put them into paper bags. They are excellent in broths, soups, and stews. Two yards square planted with Marigolds will be sufficient.

MINT.—Any time during the spring, is a good season to make a new plantation of Mint. It is propagated either by parting the roots, by slips of the young spring plants taken up with root fibres at the bottom; also by cuttings of the young stalks in April and May; but increasing it by slips, or parting the roots, during the early or middle part of spring, is most generally practised, the method of which is as follows:

Towards the end of March have recourse to such old beds of Mint as are well stocked with young plants, and thence draw out a sufficient number of the best shoots, properly rooted, observing to draw them up carefully, and with the assistance of a knife, at times, raise or separate them; by which care every plant will rise with good roots.

Having provided the plants, let them be planted in rows about

six inches apart, and five or six inches asunder in the rows; let them have immediately, a tolerable watering, to settle the earth close about their roots.

The method of increasing Mint by roots is, to get a number of old roots, and let them be parted in a proper manner, then draw drills with a hoe six inches apart; plant the roots in the drills, cover them about an inch thick with earth, and then rake the ground.

But when the above method is to be followed, the roots should be procured and planted either in February or the beginning of March, or in October or November.

Mint will succeed in almost any soil or situation.

Penny Royal, a medicinal herb, that is perennial. It is also used for some few culinary purposes. A little patch, a foot square, in the herb bed, is quite sufficient. This patch must be well cut off round the edges, for one root, if left alone for a summer, will extend over two or three yards square in good ground. This herb is usually found in abundance in old pastures.

Purslane.—The end of March is the proper time to sow this salad, for if it be sown earlier, it runs the risk of being injured by the frost, owing to its great succulency. It should be sown on a bed of light rich earth in the common ground. Sow it either in drills six inches asunder, or on the surface, and rake it in lightly and regularly. Water the bed often in dry weather, and shade it from the hot sun, till the plants have acquired a little strength. But if in April, cold or dry weather set in, some seed must be sown either in a hot-bed, under the shelter of glasses, or in a warm, dry border, and defended from cold, &c. This plant is by many people much esteemed, although Cobbett, in his customary prejudiced manner, describes it as a mischievous weed, *eaten by Frenchmen, and pigs, when they can get nothing else.*

Rampion.—This is the smallest seed of which we have any knowledge. A thimble-full, properly distributed, would sow an acre of land. It is sown in the spring, in very fine earth. Its roots are used in soups and salads. Its leaves are also used in salads. One yard square is enough for any garden.

Rape, or Colewort.—It is sown exactly like mustard, to use as salad, and is raised in the same manner. It is cultivated in large quantities in the vicinity of London, and forms the principal constituent of the early salads, being sold for mustard, from which, in its early growth, it is scarcely possible to distinguish it.

Rosemary is planted in autumn, or early in spring (15th March), from cuttings of the young shoots, from five to eight inches long, ranged closely in rows twelve or fifteen inches asunder, where they remain for one year, when they may be transferred to any part of the garden. Rosemary will grow almost in any soil, and forms

a very pretty hedgerow, when neatly kept. In the Middle States it does not readily withstand the winter, and the better plan is to remove the plants to some shelter (the cellar will answer, if nothing better offers), on the approach of cold weather.

RUE—Is propagated from slips and cuttings, and may be ranged out any time during spring, in the same manner as directed for rosemary; particular care, however, must be observed not to cut off the tops when putting in the cuttings.

SAGE.—This herb may be propagated either by seed or by cuttings, or slips off the root. April is the proper season for propagating it by slips, but the end of July, or the beginning of August, is the most seasonable time for its propagation by cuttings. The seed may be sown about the middle of spring, and the plants permitted to stand where the seed is sown, or when of a suitable size, they may be transplanted to any other position. Although they will thrive in almost any soil, yet a light soil is preferable. Wet ground is by no means congenial to them, as in winter they often perish in it; a few slips will be sufficient, if wanted only in the green state, but if it be wanted to dry for winter use, a greater number will be required. Two kinds are used in the kitchen, the green and the purple; the variegated sorts are reckoned ornamental plants, and seldom cultivated for the kitchen.

SAVORY.—There are two sorts, the summer and the winter; the former is annual, the latter perennial. Both may be propagated from seed, sown in a little patch early in spring, but the latter may also be propagated from offsets. The summer, or annual variety, is more generally cultivated: treatment precisely as directed for *sweet marjoram*. In order to have these herbs in winter, with the least possible trouble, and in the greatest possible perfection, they should be cut and dried in the manner directed for sage.

SORREL—May be raised from seed, sown in a good border, in a light, rich soil, in the months of March, April, or May; but the usual way is to separate the stoles into small offsets, in March or April, and plant them out at ten or twelve inches asunder. A short row is quite enough for a private garden; it is perennial, but should always be covered on the appearance of frost.

TARRAGON, or L'ESTRAGON OF THE FRENCH, is a very hot, peppery herb, used in soups and salads; it is also put into vinegar, to which it imparts a delightful flavour. It is perennial, and may be propagated from seed sown at any time in the spring, or from offsets put out in either spring or fall. Its young and tender tops only are used. It is eaten with beef-steaks, accompanied with minced eschalots. To have it in the winter, it must be dried in the summer, as directed for sage and other herbs.

THYME.—There are two distinct sorts of this popular and most

fragrant herb. One is called *common* Thyme, and the other *lemon* Thyme; both are perennial, and may be propagated from seed, but both may also be propagated from offsets or partings of the roots, which is by far the easiest method. A severe winter will frequently destroy a plantation of Thyme, and protection, therefore, during severe frost, becomes necessary. Some of both sorts should be preserved for winter use, cut at the same stage as is described for sage, and, as in the case of all other herbs, cut when perfectly dry, and dried in the shade, or in some place where it receives no wet either from rain or dews during the drying.

Wormwood is an herb purely medicinal. It may be propagated from seeds, from slips, or from offsets. It is perennial, and a foot square in the herb bed is enough to be allowed for it. It loses its leaves in the winter, and therefore, for winter use, it must be cut and dried in the manner directed in the case of other herbs, and put by and preserved in paper bags.

PART THIRD.

DESTRUCTION OF VERMIN INJURIOUS TO CULINARY CROPS.

Destruction of the Turnip or Cabbage Fly.

This pernicious and active little insect, is probably of all, the most difficult to guard against in garden culture. On young cabbage plants, when put out in spring, especially if from a hot-bed, or on cabbage plants in the seed bed, they are sometimes provokingly pestiferous. On ruta baga, and turnips generally, they frequently make great havoc, many times rendering it necessary to rework and recrop the land.

Steeping the seed in sulphur water, or lime slacked with urine, and mixed with a treble quantity of soot, and sprinkled in with the seed, has been found a preventive to attack; air-slacked lime, ashes, soot or plaster, strewn on the plants, and also on the surface of the ground, has in some cases proved beneficial. The application should be made whilst the dew is upon the leaves, when it will more firmly adhere.

We have tried a solution of "whale oil soap" on cabbage plants in the seed bed, with good results; a solution of common brown soap, or soft soap, would be useful—care must be observed that the solution be not too strong, or the alkali will destroy the plants, as well as the flies. The market gardeners around Philadelphia protect their cabbage-plants, by placing hens, with young broods, near the seed beds; the old ones are confined in coops, the young ones at liberty to roam over the beds; thousands of flies are thus destroyed, and others are so much disturbed they have not time to feed: the plants meanwhile gain strength to resist further attacks.

Destruction of Ants.

The Ant is one of the most mischievous of all things in a garden, and the most difficult of all to guard against or destroy. Those which have their nests in little hillocks on the ground, that is to say, the small Ant, is the sort which most frequently displays their mischievous industry in the gardens. There is nothing but fire, or boiling water, or squeezing to death, that will destroy Ants. The first thing is to discover their nest, which is accomplished in the following manner: by looking attentively, it will be found that

in the morning, very early, they all come in the same direction to the objects of their depredation, and that they go in exactly the same way back at night: then trace them to their fortress, and, when it is quite night, surprise them with a bucket of water that is as nearly upon the boil as possible, and the whole colony will be then destroyed. Various plans have been recommended by the most celebrated gardeners, for the destruction of the ants, many of which are wholly chimerical, and attended both with expense and loss of time: there is no more efficacious remedy than boiling water.

Destruction of the Aphides.

These are generally known by the names of the Green Fly, the Black Fly, &c., the latter of which are particularly injurious to beans, and some of the brassica, or cabbage tribe: they are very destructive, and every endeavour should be made to destroy them. They are not unfrequently the cause of an entire failure of the bean crop, from which they are difficult to remove but by the general plan of fumigation. By nipping off the tops of the plants a vast number of these insects will be destroyed; but the most approved method of eradicating them is to sprinkle the plants which they attack copiously with tobacco water, or to fumigate them well with tobacco smoke; either will be found quite efficacious.

Destruction of the Black Grub.

This is a most perverse, as well as a most pernicious thing, lying snugly under the ground, near the roots of the plants, in the day-time, and coming out at night to eat the plant off at the stem, or to eat out its heart. Lime has no power over it; nothing will keep it off, and there are no other means of checking its depredations than by taking it with the hand, which may be done in a garden, by examining a little about the ground just round the stem of every plant, for as soon as it has destroyed one plant it gets ready for another, for the next night's work. The ravages of this insect should be particularly guarded against, as a whole crop may be destroyed in a few nights.

Destruction of Caterpillars.

These are the larvæ, or young of the butterfly tribe; are very destructive, and various means have been adopted for their destruction. Lime-water has been used, but its efficacy is partial and uncertain. Tobacco-water possesses greater destructive powers, but it is apt to injure the flavour of the plant. The most efficacious plan is to employ a few children in the garden for a few days to pick them off the plants, and then destroy them. When the butterflies, particularly the common white ones, are observed upon the cabbages, their followers, the Caterpillars, may be soon expected. Watch the plants as soon as you see them attacked; take off the leaves; for, as it is very rarely that the whole or any consider-

able part of a piece of cabbage is attacked at once, the mischief of this pernicious insect may, in some measure, be guarded against.

Destruction of Mice.

This animal is a most destructive creature in a garden, and should be diligently sought after. Poison is not to be recommended, as it might be taken by other animals than those which it is intended to destroy. Traps are the most efficacious remedy, and we can, from our own experience, strongly recommend the following one as the most successful: soak a few peas in water, and, when fully soaked, draw a thread through one of them with a needle, then place two little sticks in the ground, at the exact distance from each other of the breadth of a brick; tie the ends of the thread, leaving the pea in the middle, to the two sticks, and then let the brick rest upon the thread; the mouse will come to devour the pea, in doing which he will gnaw the thread in twain, and the brick, losing its support, will fall upon the mouse and kill him.

Destruction of Slugs.

Have them gathered by the hand every morning, as long as they appear numerous, carefully looking over those crops to which they are most attached. If this method be slow, it is, nevertheless, sure. A very infallible trap for these depredators, is to make small thimble holes, about an inch in depth, near the plants attacked: into these holes the slugs are certain to retreat during the day, when they may be destroyed by sprinkling a little quicklime into the holes. We have always found the use of barilla to be an efficacious method of killing these vermin. The market gardeners in the vicinity of London, scatter the leaves of cabbages, or lay patches of straw upon the ground, under which the slugs retreat in the morning, before the effects of the sun are too powerful for them. The leaves or straw are examined during the day, and all the slugs gathered and destroyed.

Destruction of Snails.

This is a very mischievous creature amongst the plants of the garden in general; but its size, and its manners and habits, make it not difficult to destroy. Its places of harbour are behind the trunks or big limbs of wall trees in a garden, where they lie all the winter, and never stir till they are warmed into life in the spring. In winter time, in dry and frosty weather, snails should be routed out from all their fastnesses, and destroyed. This is the most effectual way of guarding against their depredations, for when the leaves come out, they have shelter, and are exceedingly cunning in availing themselves of that shelter; and though they may be finally discovered, it may not have taken place until the plants or the fruit have been destroyed.

Destruction of the Rookworm.

This is an underground enemy, and will clear a patch of cabbages in a very short time; a garden, however, may very soon be cleared of it. First, kill every one that you meet with in digging, next, the moment you see a plant begin to flag, dig it up and take up the worm. If the worm be on its travels, you may be sure that it is gone to the next plant, to the right or to the left. Pursue it both ways with the spade, and ten to one but you overtake him. A little perseverance in this way will soon clear a garden of the Rookworm.

PART FOURTH.

MONTHLY OPERATIONS IN THE KITCHEN GARDEN.

The precise time when certain descriptions of work in the garden is to be performed, as stated in the following calendar, applies to the latitude of Philadelphia,—but by the exercise of a little judgment, these hints may be made serviceable in every latitude of our widely extended country.

JANUARY.

During this month but little may be done in the kitchen garden, and we may as well pass on without further remark than that it is the season when preparation may be made for spring labour, by collecting manure, preparing poles for beans, rods for peas, &c. &c.

Those who have green-houses, or forcing-pits, will find plenty to attend to, but this work does not profess to treat of such matters.

FEBRUARY.

This month, like January, does not admit of much out-door gardening in the neighbourhood of Philadelphia: though further south it is the season of most active labour. From the Carolinas southward, more seeds are put into the ground in February than any other month in the year, and in that respect corresponds with the early part of April in Pennsylvania.

MARCH.

A small crop of Peas of the early kinds, may be sown about the beginning, and of marrowfats and other larger sorts towards the end of the month, in the open quarters of the garden. For the early and dwarf crops sown in the beginning of the month, from

three to four feet will be quite sufficient between the rows, and three inches deep.

The Early York, Landreth's Large York, and Early Sugar-Loaf Cabbage, should be transplanted this month, where they are intended to remain. When the plants are pretty strong, they may, in mild open weather, be planted out the beginning of the month; but if they be weakly, or much hurt by the frost, they should not be planted out before the end of the month, or the beginning of April.

Cauliflower plants in frames should have plenty of air every mild day, by entirely removing the glasses. Towards the end of the month, transplant some of the stronger plants into the place in the garden where they are intended to remain. Should cold, chilly weather ensue, great benefit will be found from protecting them especially at night; flower jars are for that purpose useful, and of easy application.

About the middle or end of the month, carrot may be sown for an early crop on a light border, or other sheltered spot, but the beginning of April is soon enough to sow the principal crop. Crops of such seed as carrot, and some others, will at this early season be much benefited, if the drills in which they are to be sown be half filled with light vegetable mould, on which the seed must be sprinkled, and then covered with the same kind of mould. In strong wet soils, this should be particularly attended to, as seeds will vegetate quicker, and become established much sooner than if sown in the natural ground.

The crops of lettuces should be thinned out to twelve inches asunder every way, and those taken out should be planted in a rich and sheltered spot, at similar distances.

In open weather, early potatos, such as the Fox's Seedling and Ash-leaved Kidney, may be planted; about the middle of the month, sow leeks, onions, and lettuces, and Early York and Landreth's Large York cabbages for succession. A small sowing of early turnip may be made in a very warm situation, and on very rich ground. Asparagus seed may be sown in the open ground. The long-pod and Windsor beans should be planted as early as they can be put into the ground, so as to blossom before the heat arrives; and if the weather be mild, sow long scarlet and red turnip radish for the first early crop; also spinach, to succeed that sown in autumn.

This and the succeeding month are favourable for transplanting fruit trees. If the reader have occasion to purchase, let us caution him against doing so from any but a responsible nurseryman—above all, avoid *auction trees:* the most worthless in the nursery are frequently selected for those sales, and with attractive names sent to some distant point, where the purchaser cannot have redress when the deception practised on him is made evident—which, perhaps, is not until after years of careful culture.

Another important matter connected with this subject, is the method in which the trees are planted. Let it be done deliberately and with care; if the ground in which you are about to plant be of an indifferent quality, provide a liberal quantity of rich earth for each tree, and cast aside that which is taken out of the holes. For an ordinary sized nursery tree, the holes should be four or five feet across, and nearly as many deep; the excess in depth to be filled up with the good earth provided for that purpose; when all is ready, place the tree in the centre of the hole, with the roots and fibres spread out horizontally or fan-shaped, and as the finely pulverized earth is shovelled in, shake the tree gently to admit the earth among the fibres. When the hole is filled up to the proper level, the tree should not stand more than a couple of inches deeper than it did before removal, which can be readily determined by the colour of the bark. A stout stake to keep the tree steady is highly useful, and if the ensuing warm weather be dry, give a little water from time to time—or what is even better, protect the surface of the ground for a few feet around the tree with litter, or any other material which will shade and arrest evaporation.

April.

This is the month in which most seeds are sown, and garden operations performed in the climate of Philadelphia. The weather has usually become, by the first fortnight in April, comparatively settled; severe frost may no longer be expected; therefore, if the earth be sufficiently dry, and the weather mild, the various branches of cropping should be attended to with diligence. No time should be lost in committing to the soil the requisite seeds and roots of plants.

In light dry soils, it will be an advantage to sow and plant early, whereby the plants will gain sufficient strength to resist the droughts of summer, but in such as are cold, wet, and late, the state of the weather must determine the time of sowing. It is always better to wait until the ground be in a fit state to receive the seed, than to sow too early, as many of the less hardy seeds will not vegetate freely, indeed, scarcely at all, if sown at this early period of the year, when the ground is wet. Rough-dig all ground not immediately required.

The gravel walks should now be put in order for the season.

Plant beans of any kind, for all sorts succeed well from this time of planting. Now plant full supplies of the best sorts for principal crops. The Windsor and long-podded beans may still be planted, if not previously done.

Sow marrowfat or other late peas, once a fortnight, or three weeks at farthest, particularly some dwarf green imperial marrow-fats. All the sorts should now be sown in open situations, not under low spreading trees. Cover the peas that are a little above ground to within an inch of their whole height with light mould.

If the weather be dry, give a little water to settle the mould about them; if frosty, protect them for a few nights with branches, or any other slight covering.

Remove the cauliflower plants which have been in frames, or in warm borders, during the winter. Raise some earth to the stems of the plants, which are under bell or hand-glasses: it will strengthen them, and assist their growth.

The glasses may still be kept over the plants, but must be continually raised at least a hand's breadth high, or in fine days, the glasses may be taken off, and let the plants have the benefit of warm showers of rain.

The New Zealand spinach should be sown in a slight hot-bed; it will spread, and afford an abundant supply.

It will be early enough, towards the middle or the end of the month, to sow broccoli; for if sown earlier, the plants are apt to start or button. The "purple cape" succeeds best in this climate.

Both red and white celery seed should be sown. If the seed be sown in rich vegetable mould, and kept rather moist, it will thrive the better. Water the bed frequently in dry weather.

Drumhead, Flat Dutch, and Savoy Cabbage seed, for the principal winter crop, should be sown about the middle or towards the latter end of the month, in an open situation.

Transplant cabbage plants of all kinds into the places where they are to remain to cabbage. It may be done the beginning or middle of this month, but if the plants be strong, the sooner it is now done, the better. Sow the seeds of cabbages of any kind for autumn and winter use. Red cabbage seed should also be sown towards the latter end of this month, to raise some plants for winter use.

Sow radishes, both the earlier sorts and the yellow turnip-rooted, for a succession.

Continue to protect mushroom beds from frost and rain, either of which would destroy the spawn.

Onions should be sown for a general crop.

May.

Let all the coverings that may have been used to protect either winter or early spring crops, be now cleared away. Rough dig all vacant ground, and hoe and rake all the small borders. Use the hoe freely amongst crops of onions, spinach, &c. Destroy all weeds as they appear. Have all roots, docks, dandelions, and similar weeds, carefully dug up with a fork, and immediately removed from the garden. Be careful to destroy all snails and slugs.

After a shower of rain, draw the earth up to the stems of cabbages and cauliflower plants. Birds being very destructive to the seeds of all the cabbage tribe, it will therefore be necessary to

guard them by covering the beds with mats, or with old fishing nets, until the seeds begin to vegetate.

Sow and plant all sorts of cabbages, and earth and clear from weeds the crops already planted. Take advantage of dry weather to stir the surface about the stems of all the forward crops of cabbages, by which they will be greatly strengthened. Sow full crops of savoys both at the beginning and end of the month.

Peas should be sown twice this month, or in succession, as the previous sowing appears above ground. Beans likewise, at similar intervals of time, when frequent crops are required. Of the dwarf kidney or bush beans, there are many varieties; among the better and more productive kinds, are the red and brown valentine, and China red-eye.

The Lima and the Carolina, or Servee beans, may now be planted.

Rhubarb may be sown or planted. The large giant rhubarb is the most productive in the open ground, and Buck's scarlet for forcing.

Carrots should now be sown,—the long orange and the early horn, are the finest for table use. A full crop of parsneps should also be sown.

The celery plants which were sown in March or April, for an early crop, should be pricked out about the middle or latter end of this month, into a nursery-bed of rich light earth.

Plant the main crop of potatos. This is the best month in the year for the purpose. Sets should now be used, cut to two or three eyes only.

Continue to sow and transplant lettuces of all sorts. Sow each sort separately, and repeat the sowings and plantings once every fortnight or three weeks, that a regular supply may be obtained. Sow radishes of different sorts every week during the summer. Give plenty of water in dry weather: if this be not attended to, they will be hard, and unfit for use. Thin the crops already sown.

Peppers or capsicums, and tomatos, may be sown for transplanting; cucumbers, squashes, nasturtiums, and other tender vegetables, may now be safely planted. All pot-herbs, such as thyme, sage, mint, balm, &c., should now be planted.

June.

If the weather in this month prove dry, the growth of many esculent plants will be considerably retarded, particularly the beans and peas which are in flower, the blossoms of which fall off before arriving at maturity, and, consequently, are not succeeded by fruit. A certain degree of attention is therefore necessary to give a regular supply of water to the growing crops.

There is no work in the kitchen garden which at this time requires greater attention than the eradication of weeds; many will now begin to perfect their seeds, which, being shed on the ground,

will occasion a considerable degree of labour for several years to accomplish their extirpation.

Every part of the kitchen garden should now be kept in a neat and well-regulated condition; and a constant attention should be paid to the progress of all seeds committed to the ground. Those that vegetate freely should be forwarded by hoeing, thinning, and watering; and in those cases, where the seed has failed, it should be immediately resown: no time should be lost when such circumstances occur. Some crops, such as beets, onions, parsneps, and some others, may be restored by transplanting them from those places where they may have come up too thick. The depredations of insects should be guarded against as much as possible, until the crops are rather advanced; for after they have formed their rough or perfect leaves, few insects attack them, at least not so as to endanger the crop. When recourse is had to watering, it should be applied as late in the afternoon as possible, or early in the morning, but never during the middle of the day. When the ground can be kept in a moist state during the warm months of summer, the most luxuriant crops may be expected.

Beans and Peas for late crops should be sown both at the beginning and also at the end of this month. Those which are now in blossom should be examined and topped. Earth up and otherwise stir the surface of the advancing crops, as necessity may require. At this time, the crops which were formerly planted should be hoed and earthed up. Cabbage and broccoli plants which are fit should be planted out. Transplant spring-sown cabbage of all sorts for autumn and winter use. Earth up the early and general crops of cabbage as they advance; the former will now be advancing to maturity, and may be forwarded in cabbaging, if the leaves be tied together with strings of matting. The general crops of onions should, towards the middle or end of the month, be cleared from weeds: this operation should be performed with a narrow hoe, which will not only destroy the weeds, but by stirring up the surface, will contribute much to the growth of the crop. The crops of potatos as they advance should be earthed up. Prick out celery plants sown in March: a slight watering to be given every other evening. Continue to sow and transplant all sorts of lettuces: give plenty of water both to the newly sown and also to the transplanted ones. Tie up to blanch the forward crops of lettuces; choosing a dry day for that purpose. A full crop of kidney beans may now be planted. Propagate by sowing, cuttings, or dividing the roots, all sorts of herbs. A small sowing of ruta baga may now be made, deferring the principal one till the middle of next month. Beets may also be sown for a late winter and spring supply; the early part of June will also be timely for the sugar beet, if not attended to the preceding month.

JULY.

Attend to many of the directions laid down for the month of June. Thin all crops as they advance; keep the hoe in full employment in every part of the garden. Support with stakes the crops that may require it, and water, as far as is practicable, every thing that stands in need of it. Destroy insects, eradicate grubs, which at this season are by far more mischievous in the garden than any other object. Destroy slugs by picking, or by watering with lime water, or strewing hot lime round the plants. Where watering is necessary, let it be done from four to six in the morning, and from six to nine in the evening. Sowing may be principally confined to peas and ruta baga; of the former, the marrowfat, once in ten days.

AUGUST.

From the 10th to the 20th of this month is the usual period for sowing the main crops of turnips; if the weather be very dry, and the earth difficult to prepare, it may be deferred for a few days, but it is better to get the crop in early, inasmuch as the fly sometimes makes a second sowing necessary. *Poudrette* is said to be a protection against their ravages, if used in the quantity of 20 to 25 bushels per acre.

Hoe, weed, thin, and stir the surface amongst all crops. Water, shade, and attend to neatness and order. Clear off all crops as soon as they are exhausted. As slugs and other vermin will be now making deplorable ravages amongst crops of young plants, a constant attention is required to subdue them. Those seeds which are ripening should be gathered when dry, and, after being properly hardened, laid by for use in a dry, airy seed-room.

Some seeds retain their vegetative properties better when kept in the pods, or seed-vessels, until they are to be sown in the spring; these, when perfectly dry, should be hung up in bunches in an airy shed, out of the reach of frost. Accordingly as the crops are removed, let the ground be cleared of the refuse, either by hoeing or raking, or rather by rough digging, which will give the garden a much neater appearance, besides very much improve the soil by exposure to the atmosphere.

Watering in dry weather is required for all young newly pricked out plants, and others lately planted; and to seed-beds in particular. In rainy or showery weather, take the opportunity to sow, prick, and plant all necessary crops of the season; and to plant slips, offsets, &c., of aromatic and other pot-herbs.

SEPTEMBER.

In this month several principal crops are to have the finishing sowing and planting, some for succession in the present autumn and following winter; others to stand the winter in young growth, to come in for early crops next spring and summer. The ground

must now be prepared in proper time, by dunging and digging for succeeding crops. Give all spare time to watering, which, if the weather be without rain, is essential; and attend to clearing off all decayed crops, and to fallowing spare ground.

The principal sowing crops for this month are spinach, lettuce, radishes, turnips, cabbage, coleworts, and succession of small salading, as cresses, mustard, &c.

The principal planting crops are included under celery, endive, coleworts, and leeks, and the several sorts of perennial, aromatic, and pot-herbs.

This is universally considered the chief month for the formation of mushroom beds. (*See Mushroom.*)

About the middle of this month it is usual to sow the early kinds of cabbage, also cauliflower and lettuce, to be protected during winter in cold frames, and transplanted to the open ground in March and April. (See directions.) Cut off the tops of parsley to make new leaves sprout out for winter use.

October and November.

In these months all sowing and principal planting should be finished for this year; some necessary for winter, others to remain for next spring and summer. At this season many crops will be consumed, or past perfection. The ground should be cleared from the refuse, and weeds hoed down, or the ground digged; and all advancing crops should have a thorough clearing from autumnal seed weeds, &c. Some want earthing up, and several esculent roots want digging up to preserve for winter eating. Take up all carrots and parsneps, to be packed in sand in a dry place, or in pits, like potatos: and pare off the crowns clean, in order to prevent them from shooting in spring. Horse-radish may now be planted, as also lettuce and endive. Transplant the cabbages of the autumn sowing, and any other greens, the planting of which had been neglected last month. Dung and dig vacant ground. The business of sowing and planting is but inconsiderable at this season; but is necessary in a few articles, both in the open ground and some in hot-beds. Earth up celery, and prepare it to keep during winter by giving proper shelter. Clear the advancing young crops from weeds. Winter onions and spinach to be carefully hand-weeded; hoe between advancing young crops of coleworts, cabbages, broccoli, savoys, celery, leeks, lettuce, endive, &c., loosening the surface of the earth about the plants, which will beneficially encourage their growth, and the hoeing will also kill many of the slugs and other detrimental vermin lurking in the earth at this season. All vacant ground should be forwarded by dunging, when necessary, and digging the ground in ridges to improve for planting and sowing in the spring.

This is the season for setting out fruit trees, shrubbery, &c. If it is requisite to purchase the former, *be sure to do so of some well*

known nurseryman, else the chances are you will be imposed on. *Little reliance should be placed on trees sold at auction*—they are frequently the refuse of the nursery, and probably from a distance, where redress cannot be obtained in the event of the deception having been detected. For full directions for transplanting, see page 80 of this work, or more enlarged remarks in the COMPLETE FLORIST, a little work in which many hints may be found, useful to country residents.

DECEMBER.

This being the month in the entire year in which the least is to be done in the way of sowing and planting, the active gardener is particularly called upon to prepare to the best advantage the soil for succeeding operations. Everything likely to suffer from the frost, ought to be well protected. If the weather be frosty, and the ground hard, and unfit for the spade, let the manure be carried to the plots which are to receive it. If the weather be open, let every hour be occupied by the spade; the ground to be laid up in ridges, to enrich for spring sowing and planting. Clear away decaying stems, dead leaves, and all useless litter. Dig and trench vacant ground, applying manure as requisite. Pick out from stores of edible roots such as are decaying. Take away damp straw, and keep seeds dry.

THE FRUIT-GARDEN.

APPLE-TREES.—To procure fruit-trees, perhaps the best method is to purchase the young trees from the nursery-ground, where you may obtain good young trees, generally speaking; but if it be preferred to propagate the trees altogether, they may be grafted on stocks raised from apple pips. We shall subjoin clear but concise directions for performing the operation of grafting and budding hereafter, and proceed now to the training.

The training and pruning the apple-tree in garden culture is an art but little practised in this country; in Europe, on the contrary, every garden, however limited its extent, has a few trees trained on espaliers beside the walks, or against the walls and fences. It would surprise those unacquainted with that mode of culture to be told the quantity of fruit, of the finest quality, thus obtained.—Perhaps some of our readers may desire to know the method pursued in such culture: we therefore subjoin the following details.

Apple-trees are trained in three different ways: first as standards, which is the method pursued in orchards and large gardens; then as espaliers, which is a very advantageous method for small gardens, but trees so trained require very constant attention to keep them in good order; but when they are properly attended to, perhaps more fruit is obtained thus than by any other method. Some kinds of apples will succeed against a wall, but as a general rule it is by no means a good method; when it is resorted to, they may be either trained horizontally, or by the fan-training—the latter is best where the wall is more than six feet high, as the tree will thus sooner fill its allotted space.

PRUNING. — Apple-trees produce their fruit upon short spurs growing from the sides and ends of the branches, and the same branches continue bearing many years, increasing their quantity of spurs as they gradually advance in length: it may therefore be observed that, in the general course of pruning these trees, their branches and shoots are not to be shortened, but trained along horizontally to the espalier or wall at their natural length, at least as far as there is room to extend them. While young trees are advancing, and require a farther supply of young wood, retain a proper quantity of the last summer's shoots when you prune in winter, those that are the best placed, and always a terminal shoot to each mother branch, and cut out all the superfluous and irregular

ones; but in full-trained or old trees retain the former trained-bearing branches as long as they continue fruitful, and cut out worn or decayed branches, or any that are too much crowded, cutting close to the main branches. In pruning have particular care to preserve all the fruit-spurs. Trees which have arrived at full bearing, and have filled the space allotted to them, require little more pruning than merely to regulate their spurs.

Standard trees, or such as form our regular apple orchards, require comparatively little attention after they are well established, further than to prune luxuriant wood, and to guard against the insects, particularly the *borer*, which is now making dreadful havoc with the apple-trees in the region around Philadelphia. Most persons who cultivate the apple, which is *par excellence* the fruit of America, do so in the standard or orchard mode, and the abundant supply which is found in most sections, bears evidence that no impenetrable mystery enshrouds the mode of treatment. In too many instances, all that the proprietors seem to think their duty, is *to plant*, leaving chance to perform the rest. How many orchards do we see in which the knife or pruning-saw has never entered! knotted, snagged, and moss-grown, browsed by cattle, and the prey of insects, they miserably linger, yielding but a tithe of what might be looked for under better treatment. It is to be hoped that, as the light of horticultural science is extended, a truer course may be pursued—interest, the ruling passion, will enforce a change.

Renovating old trees is one of the greatest improvements of modern practice. When a fruit-tree has covered its allotted space, it can only be kept in bounds by the knife, and this counteracts the natural growth so much that the vigour of the tree is exhausted in the production of barren shoots. To bring such trees into a bearing state, the present method is to cut off carefully and smoothly all the largest barren branches, which have grown away from the wall, leaving the main branches like naked poles. The summer shoots from these are regulated by displacing all the fore-right and the weakest, leaving the most promising to be nailed to the wall; the points of these reserved shoots, except the leading ones, are pinched off soon after midsummer; this swells the buds below, and at the winter pruning they are shortened to from four to six inches in length, and in a year or two they become covered with fruit-buds and spurs. Another method is to cut out every other branch, and place thereon one or two grafts, which are to be trained up to take their place, and in a year or two after cutting back the remaining branches, which are also grafted and trained in the same manner; or if the whole tree is cut down and grafted at once, either with its own or a superior sort, the result will be a regenerated tree, prolific and healthy. In the same way all naked parts of fruit trees may be brought into form and fruitfulness by grafting and budding, and trees so treated will attain a large size in four years, and give more fruit than a new planted tree will in ten.

ESPALIER TRAINING.—Espaliers are very convenient in small gardens, as they form a kind of hedge on each side of a path, thus occupying but little room, and generally bearing well. The trees should first be trained to one central shoot; and this must be constantly headed down, till it throws out a sufficient number of lateral shoots, which are to be spread out in a horizontal direction; never being stopped till they have attained the length you choose them finally to occupy, when the end should be cut off, which will cause them to throw out other laterals and fruit-spurs. In planting a tree, which you design to train as an espalier, select one which has a good strong shoot coming up from the graft. Whether it is planted in the spring or autumn, (the latter is best, if it be not left too late,) let the tree stand till the buds begin to break in the spring; then cut the shoot down to within three buds of the bottom; cut in a sloping direction, and let the cut end be near where the top bud is coming out; these buds will make three upright shoots. About the middle of July take the two bottom shoots, and as they stand one on each side of what must now be considered as the main stem or trunk, bend them down horizontally, and tie each of them to two little stakes, driven firmly into the ground. These stakes should be made of spine oak, or the trunks of young locust trees, cut down in winter, and their branches trimmed off close; these will last for many years: while indifferent stakes will rot off, and require renewing in a few years. The shoots are to be tied to these stakes by bass matting; and the top shoot is to be suffered to go on till about the end of the month, when you should take off the top from that shoot. In the spring cut off the top shoot again, to within five buds of the first lateral branches; cut two of these buds, and you will then again have three shoots, two for training horizontally, and one to grow upright; you must train the horizontal shoots as before, which will, of course, require longer stakes: and these stakes will also support the lower shoots, which having grown longer, will require further support. Proceed thus year after year, leaving the horizontal shoots at from seven to nine inches apart, the lowest being only a few inches from the ground; you may carry them to what height you please, but they are seldom carried higher than six or seven feet. In gathering apples grown on spurs, care should be taken not to pull the spur off. In pruning there needs no new supply of limbs or shoots, therefore the little side shoots that come out of the limbs may be cut, either clean out, or, if there be a deficiency of spurs, leave one or two buds, if the joint be short; and these will often send out spurs. In the second year after planting the tree, when you have got two lateral shoots trained horizontally, and one upright shoot, each of the lateral shoots will send out two side shoots near their point, and one at their point; the last is to be suffered to go straight forward, but the others are to be cut off, leaving only one bud; the same is to be repeated each year, till

you have a limb as long as you may require, furnished with spurs its whole length; and when you do not choose the limb to extend any further, cut off its point, as before observed.

In pruning these trees, observe that the same branches remain many years in a fruitful state, and it is requisite, when the bearers become closer than from four to six inches apart, some must be pruned out in January or February; take off such as are worst situated, or are least likely to bear, from being worn out, or not well furnished with fruit-spurs. When it is requisite to make room in a particular part of the tree for any branch that is evidently well adapted for bearing, let some of the most irregular limbs be cut out; and always when old or large branches are taken out, cut them close to the stem, or to any lateral branch which they support, and in cutting out branches, never leave any part above the juncture of the next branch.

A new and very successful method of training apple-trees, similar to that employed for the red currant, has been recently adopted. All the lateral branches are cut off as they arise to within one or two inches of the main branches, after a few years these become well furnished with fruit-bearing spurs, and trees thus trained not only occupy much less room than espaliers, but are more productive.

Planting.—When the grafted stock is well established, it may be desirable to remove it to the spot it is finally designed to occupy; in doing this it should be kept out of the ground as little time as possible, and during that short period the roots should be carefully covered. In transplanting a young tree great care should be observed, particularly if it has stood above a year on the spot. In removing all young trees out avoid as much as possible tearing the roots: you should commence by digging away the earth at a little distance all round the tree, to a considerable depth, so that the tree will be almost ready to tumble down by itself; for in pulling with any violence you may break the roots, and if any large root be broken off near the stem, the tree will have a defective root, and be a considerable time before it recovers. When you have got the tree out of the ground, cut off all the larger shoots of the roots to within six inches of the stem. You must now make a hole to receive the tree, which hole should be deeper and wider than is requisite for the mere reception of the root. Break the earth at the bottom of the hole, which must be of a depth to place the tree about the same level, when it is placed in it, as it stood before it was removed. If the tree is placed against a wall, the head should lean gently against the wall, and the bottom of the trunk stand about eight or ten inches from it. But if it is to be a standard, it should be held perfectly upright, and, while thus held, fine earth should be shaken gently upon the roots. The tree must then be shaken a little to cause the earth to fall completely in among the roots, filling up the interstices, touching and covering closely all

round the roots. When you have covered all the roots, fill up the hole with the soil which was dug out of it, taking care to break it. Before you have filled in all the earth, tread gently round the tree, beginning about a foot distance from the stem, and passing round and round to within three or four inches of it, then put the rest of the mould over the treading, and leave a kind of trench or ditch beyond the trodden part to convey the moisture down to the roots. If it be late in the spring when you plant, lay a little short litter into this trench, and give the tree a watering occasionally until the month of July, unless the season be a rainy one.

To preserve apples for late winter and spring use, various modes have been adopted. We have now before us (May, 1844) some half-dozen or more kinds in excellent preservation, which have been kept in a cellar packed in barrels, the interstices filled with *dry sand*, to exclude air. A very successful cultivator of this fruit has assured us that for thirty years he has pursued the above method of preserving apples, and with uniform success.

The following named kinds of apples are such as the inexperienced may plant with certainty of good results; they are well known and fully tested varieties, suited to all seasons. Many other kinds having equal merit could be added to the list, but the limits of our Manual will not admit. Those who seek further information may consult "Coxe on Fruit-Trees," and "Kenrick's American Orchardist," both excellent publications; from the former we have copied the following descriptions:—

Bough Apple.—The size of this apple when on young trees, in rich ground, is sometimes large; the form is rather oblong—full, even, and fair; the skin is a very pale yellow, the flesh white, sweet, tender, juicy and well flavoured; it is the finest early table apple we have; and as an eating apple, is preferred to any other at the season in which it ripens, which is in July and August.

Summer Queen.—The Summer Queen is an apple of the finest quality, and its appearance is uncommonly beautiful. The size is large; the skin has a fine rich yellow ground, mixed with red, handsomely striped and clouded, sometimes in a proportion greater than the yellow; the blossom end is much pointed, and full of little furrows and protuberances; the stalk is long, and planted in a deep cavity, with projections of the flesh around the stalk, like the Roman stem; the flesh is rich, yellow, and highly scented, equally suited for eating and stewing. It is not fully ripe until the beginning of August, but can be used for stewing long before that time.

Summer Rose.—This is an apple of singular beauty and excellence, both for eating and stewing: the size is moderate, the form flat, the skin smooth, of a beautiful yellow, resembling wax, blended with red in streaks and blotches; the flesh is sweet,

sprightly and juicy; it does not become fully ripe till August, but is an excellent stewing apple in July.

Early Summer Pearmain.—This is one of the finest fruits of the season; frequently preferred to a fine pear: the size is middling, the form oblong, uniformly regular, the ends both deeply indented—the colour in the shade is a dull red, somewhat streaked and faintly spotted; in the sun it is frequently of a lively red, blended with a rich yellow: the juice is abundant until too ripe; the flesh singularly tender—it frequently cracks open on the tree, and bursts from its own weight in falling; it is equally adapted to the table and stewing, and is probably the most popular apple of the season, which commences with the first of August—it being very free from rotting.

Codling.—The Codling, called also the English Codling, is a very fine fruit for pies and stewing, and is also a pleasant table apple: it grows very large and fair; the form is oblong, rather irregular; the skin is a bright, though pale yellow, with a fine blush frequently towards the sun—it is somewhat pointed towards the blossom end; the stalk short, the flesh white, tender, and sprightly. The tree is uncommonly handsome, vigorous, and fruitful; bearing very young, and constantly—the leaves are large—it makes a fine appearance in an orchard: the fruit is fit for stewing from the first of August, but does not become fully ripe till the end of that month, and continues in season till late in October: it is one of the most profitable apples for market, ripening gradually, and being very free from rot.

Maiden's Blush.—This is an apple of large size, and great beauty; exhibiting a lively contrast: a yellow ground, with a bright red cheek, whence it derives its name, given to it by Samuel Allinson, Esq., late of Burlington, who first brought it into notice; the form is flat, the skin smooth, the flesh white, tender and sprightly, remarkably light, and fitted for drying, for which it is preferred to any apple of the season: the stalk is short, and grows in a deep hollow, as does the eye—the fruit ripens in August, and continues in perfection till the end of September, and is fit both for pies and the table: the tree is uncommonly handsome, as well as vigorous in its growth, forming a fine open and spreading head; it bears abundantly and constantly, and is a very popular apple in the Philadelphia market.

Fall, or Holland Pippin.—This is one of the finest and most beautiful apples of the season; the size is very large—it generally weighs a pound; the form is rather long than flat, the skin smooth and fair—of a clear, pale greenish yellow; the flesh pale yellow, juicy, tender, sprightly, and finely flavoured: it is a very popular apple for market, and is used both for eating and cooking; the stalk is short—it is very deeply indented at both ends; it ripens in October, and keeps well as a fall apple—the tree grows very vigor-

ously, handsome and spreading, with uncommonly large shoots and leaves.

White Sweeting.—This is a large, fair, pale yellow apple, rather of an oblong shape; the flesh is white, sweet, and tough, of a pleasant taste—and makes excellent food for hogs, and very fine cider in September. The tree grows very handsomely and vigorously, and thrives uncommonly well on sandy ground: it has been much cultivated in the neighbourhood of Burlington, N. J., where it is known by the name of Wetherill's White Sweeting.

Pomme D'Api.—This apple is called in New-York the Lady Apple, from the beauty of its appearance; it is of a very small size, and flat form—the colour, when ripe, a brilliant yellow, with a dark red cheek; the skin smooth, the flesh white, crisp, breaking, and of a very delicate taste, with very little core; the juice mild and agreeable, the seeds small, short and wide; the tree grows remarkably straight, with upright branches, and is of middling size. In France, from whence it was imported, it is sometimes called Long-bois, or Longwood—the fruit grows in clusters; it is a late but abundant bearer; it keeps well during the winter, and hangs late on the tree: it is a much admired dessert apple; no trees make a more handsome appearance in an orchard; the leaves are small, and the wood dark, approaching to a black.

Bell-Flower.—A remarkably large, beautiful, and excellent apple, both for the dessert and for cooking; it is of a pale, but bright and fair yellow colour; the cheek next the sun has sometimes a blush, but more frequently is without any red: the form is oblong, somewhat pointed at the blossom end—both ends are deeply indented—the flesh is rich, juicy, tender and sprightly; it has uncommonly large full seeds, which are lodged in a pericarpium of unusual size, and if shaken can be distinctly heard; it ripens late in October, when its great weight causes it to fall in windy weather. —if carefully picked before they are too ripe, they will keep in high perfection through the winter, till late in the spring, especially when they are shrivelled or wilted.

Wine Apple.—An uncommonly large, fair, handsome red apple —the form is round, flat at the ends: the skin is a lively red, streaked and spotted with a small portion of yellow: the stalk end frequently of a russet colour, both ends deeply indented; the stalk very short, the taste is rich and pleasant, an admired table fruit, and excellent for cooking as well as for cider; it ripens in October, and keeps well through the fall and winter.

Esopus Spitzemberg.—This apple possesses great beauty, and exquisite flavour; it is said to have originated in the vicinity of Albany—it is supposed to deteriorate when transplanted to the south of the Highlands on the Hudson River. In size, it is a large apple; in form oblong—a fair and smooth skin, the colour a lively and brilliant red, approaching to a scarlet, with numerous

small yellow spots—the flesh is yellow, and singularly rich, juicy and sprightly; the stem is of moderate length, planted in a deep hollow, the end projecting a little beyond the level of the fruit: its maturity is about Christmas.

Kaighn's Spitzemberg.—This apple has a faint resemblance to the Esopus Spitzemberg, but is more pointed towards the crown; the colour is a lively but pale red, faintly streaked, and full of white spots: the skin is smooth, the stem long and deeply planted, the crown very hollow—the flesh finely flavoured, yellow, juicy and tender; a beautiful early winter fruit, highly deserving of propagation. The tree is of spreading growth, and a very unsightly form; its name is derived from a family residing in Gloucester county, New Jersey, where it was first cultivated.*

Cumberland Spice.—This apple was brought from Cumberland county, New Jersey. It is a fine fall and early winter fruit for the table—the size is large, the form rather long, lessening towards the point; the colour a pale yellow; the stalk short and thick, with a small cavity around it; the flesh is remarkably white, tender, and easy of digestion; the pericarpium large and hollow; the skin full of clouds of black dots near the stem, apt to shrivel after keeping some time; the trees are thrifty and fruitful.

Newtown Pippin.—This is, in most of its varieties, the finest apple of our country, and probably of the world. It varies much in quality, with soil, aspect, cultivation, climate and age: although peculiarly adapted to strong high ground, it may be raised in great perfection on all good wheat and clover land; the better the soil, the finer will be the fruit—for the growth is not vigorous, and in every soil the bark has a rough appearance; the form is rather flat, the size large, the skin a greenish yellow, with black clouds, and frequently with red spots or blotches; the ends are hollowed, the stem short, the flesh rich, yellow, juicy, breaking and highly flavoured; it ripens in November, and is often kept till May and June—it is a superior table fruit, and an excellent kitchen and cider apple.

Winesap.—This is one of our best cider fruits, and is much esteemed as a good eating apple; the size is middling, the form round, lessening a little towards the crown; the skin is smooth, the colour a dark red, with a small portion of yellow, and sometimes a few streaks; the flesh is rich, yellow, and tolerably juicy, pleasant, and sweet; the cider produced from it is vinous, clear, and strong—equal to any fruit liquor of our country for bottling. The apples hang late, and make good cider without housing; they will however repay all the expense of complete maturation in an airy loft, by the increased flavour of the liquor—the tree is well adapted to light soils: of one hundred trees I planted on a sandy

* The late Joseph Kaighn, Esq., of Kaighn's Point.

blowing knoll eight years ago, and well cultivated, not one has died—every tree bears fine fair apples; it is becoming the most favourite cider fruit in West Jersey. The form of the tree is irregular, the branches often grow downwards, and render it difficult to train in a handsome shape; it bears more uniformly than any fruitful kind with which I am acquainted.

Carthouse.—This apple is said to have been brought from Virginia—it obtained its name from a family in the Delaware State. It is highly esteemed for its excellence as a table apple late in the spring, and as a good cider fruit: it is a most abundant bearer, and hangs on the tree very late in the season; the tree is hardy, of a handsome, open, spreading, and vigorous growth — the fruit is small, the colour a deep red, sometimes a little streaked with yellow—the skin of a polished smoothness; the form inclining to an oblong; the flesh is very firm, yellow, and rich, not fit for eating until mid-winter, when it becomes juicy, tender, and finely flavoured.

Tewksbury Winter Blush. —This apple was brought from the township of Tewksbury in Hunterdon county, New Jersey; it is a very handsome, fair fruit, with more flavour and juiciness than is to be usually found in keeping-apples; I have eaten them in good condition in August of the second year, preserved without particular care, perfectly plump and sound. The size is small—the form round—the skin smooth: the colour yellow, with a bright red cheek—the flesh yellow, tolerably juicy, and well flavoured, with a considerable degree of sprightliness; the tree is of vigorous growth, straight, and well formed—the fruit hangs late in the autumn.

Apricot.—In propagating this tree, if it is not purchased from the nursery, the stock proper to bud or graft on is the plum, though it is more generally budded on the peach, and we have heard persons of experience give that stock the preference; it certainly grows more luxuriantly on the peach, and with due care attains comparatively a great age. The apricot is not subject to the mildew, or the various blights that so much affect the peach and other wall trees. It is a free bearer, and attains a great age, continuing to bear even after the trunk has become hollow from age. The young fruit, when about the size of large gooseberries, are much esteemed for pies or tarts; and as the tree very commonly produces more than it can nourish to perfection, they should be always thinned out, and those which remain will be the finer, and the tree will produce the better the next year.

Budding is more commonly and advantageously employed for the apricot, and indeed for all stone-fruits, than grafting, as they succeed best by this process; the method of performing this will be detailed hereafter.

The winter is the proper season for pruning these trees, as well

as the peach and nectarine. The rules which we shall now lay down for the pruning of the apricot will be found equally applicable for the peach and nectarine, as they all produce their fruit principally upon the young shoots of the preceding summer, the fruit blossoms rising directly from the eyes of the shoots, a good supply of which must be reserved annually to train in for bearing; the apricot, particularly, bears often on the small natural spurs rising on the two or three years' wood, and consequently all such spurs should be carefully preserved, for these generally bear good fruit; but the young yearling shoots are to be considered as the most profitable bearers. The general branches and bearing shoots are to be trained to the wall horizontally, at from three to five inches distance, and you must prune out annually all superabundant shoots that cannot be trained in with regularity, and also a considerable part of the old or two last years' bearers. A supply of the best of the last years' shoots must be left in a regular manner in every part of the tree, shortening these shoots more or less according to their strength.

Before you begin to prune, unnail all the young shoots and most of their mother branches, by which means you will have room to use your knife properly. Preserve every young shoot, whether promising fruit or not, which is produced nearest the root of the tree, or the trees will become naked at bottom, than which nothing can be more unsightly. In pruning, select the most promising and best situated shoots, cutting out, to make room for them, all useless ones and old naked branches, not well furnished with bearing wood. Cut off the shoots you reject close to the stem, leaving the one or two you may select to form a regular continuation of the branch of which they form a part. Retain shoots of moderately strong growth, which appear most fruitful and likely to furnish a good supply of blossom-buds, rejecting weakly, slender shoots, and such as are very long jointed, as well as those of a thick spongy growth, and shoots remarkably rank and luxuriant,—cut them all clean out. Take out also some part of the bearers of the last two or three preceding years, prune them down to some eligible lateral shoot, or to their origin, as it may seem expedient.

The end or general intention of pruning and training is to bring the tree to a good and regular form; to provide a succession of shoots; to disencumber it of useless and hurtful branches; to invigorate that which is weak, and to check that which is too luxuriant; to preserve proper limits; and to produce a good supply of fruit.

There are many different modes of training trees on walls, trellises, and espalier rails, and that mode must be adopted which is most suitable for the situation, &c. The fan method of training is the most recommended for the apricot, peach, and nectarine, and also for plums and cherries which bear on the last year's wood,

and when neatly and regularly executed, no mode of training looks better to the eye. The only objection to this method is, that the branches all proceeding from the root in right lines, create so rapid a flow of the sap upwards, that the lower and horizontal branches have not their due share, and consequently often die. An improved method of fan-training is sometimes adopted, in which it is attempted to divert the too rapid current of the sap, by turning the principal branches into crooked channels, and thus to check its too hasty ascent into the upper branches, while the lower are left to starve.

In March, when the buds of the apricot, peach, and nectarine are swelled for bloom, they are liable to be rubbed off with the least touch, and great care should be taken if they are then pruned. When the trees are in blossom, some of the choice kinds should be defended from frost by being covered with mats of a large size; one end of each mat should be fastened, with hooks or nails, to the top of the wall, and the mat hanging down over the trees should also be made fast at the bottom, to prevent its being blown backwards and forwards by the wind, so as to beat the blossoms off. These mats should be removed whenever the weather becomes mild, as it is only in sharp frost and cutting winds that the trees require to be thus sheltered. An excellent method to protect apricots is, just before the flower-buds expand, to stick the trees with dried branches of fern leaves, putting a net over to prevent the wind blowing them off. The fern should be stuck between the branches in a spreading manner, so as to afford shelter and protection to the blossoms. This covering should remain on till the fruit is the size of a pea; this method does not answer so well with the peach or nectarine as with the apricot, as they are more apt to be attacked by insects, and the breed of these is promoted by the long continuation of the covering.

Copings of stone, or other materials, to the fruit wall are found to be the best protection against frost, and a little additional protection in very severe weather will save much fruit. In May, when the fruit is set, it will, as before hinted, be found requisite to thin out the superabundant fruit, as the apricot in favourable seasons frequently sets a superabundant crop of fruit, often in thick clusters, that would neither have room to grow, nor receive sufficient nourishment to attain to any thing like perfection; these must therefore be reduced to a moderately full crop on each tree. This thinning should be carefully performed, looking over the branches regularly, and singling out the fruit on each branch that is most proper to leave from their promising appearance, size and shape, and their most favourable situation on the branches; three or four apricots may be left on the strongest shoots, two or three on the middling, but not more than one or two on the weaker shoots. The fruit should never stand nearer than within three,

four, or five inches of each other, according to their size and the strength of the shoot.

The following sorts of Apricots are those most celebrated:—

Roman,	Latimer's Peach,
Large Early,	Transparent,
Breda,	Large Turkey,
Brussels,	Black-fruited,
Moor Park,	Gold Blotched.

THE BARBARY.—This is a shrub but little cultivated, though the fruit is in some sections much esteemed for preserving, on account of its agreeable acidity. The Shakers at Lebanon, N. Y., have paid some attention to it, and send the fruit to the city of New York for sale. It is raised from the seed or from suckers of the parent plant; requires but little cultivation, and should be planted in the outer part of the garden, under the shelter of taller trees, or the shade of a hedge, as the rays of a hot sun prevent the fruit attaining a large size.

CHERRIES.—The cherry-tree is propagated by being either grafted or budded on a stock raised from the cherry-stone; the stones for this purpose should be sown either in September or October; a dryish light mellow soil should be selected for this purpose, which should be dug and prepared by being formed into a bed four or five feet wide; an inch or two of earth must be taken evenly off the top, and then the stones are to be sown regularly and moderately thick; press them into the ground with the back of the spade, and then cover them an inch and a half deep with fine soil, laying it on in a regular manner. When these stocks have been planted out, and have attained the proper size for budding or grafting, they are to be removed to where they are finally to stand, placing them at least twelve or fifteen feet apart.

If the cherry is required for a wall or espalier, the stock should be raised from the stone of a morello or the may-duke cherry. The winter months is the proper season for pruning the cherry, either trained against a wall, or in espalier or standard form. What are called *heart cherries*, have been considered as bad bearers when trained against a wall, but pruning them as *may-duke cherries*, that is, leaving a great many fore-right shoots in summer, tucking them in with some small rods run across under the adjoining branches, to keep them close to the wall, and prevent their being broken off by the winds, or from looking unsightly, at the same time pinching off their extremities to swell the buds below. Never make use of the knife, if possible, in summer, as the shoots die from the place where they are cut, leaving unsightly dead ends, which will infallibly bring on the canker. These shoots may be cut in the spring to about a couple of eyes. When the trunks become hollow, cut out all the loose dead parts, and examine the roots, cutting off what is rotten, injured, or decayed.

In cherry trees the removal of the rough or decayed epidermis in rings has been found particularly useful, both for the fruitfulness of the tree and removal of insects.

If the pruning of the cherry was neglected in the winter, it may be performed any time in autumn. In these trees the same bearers continue fruitful many years, principally upon short natural spurs on old branches, which must be retained accordingly, and let only any casual worn-out or unfruitful wood, that supports little or no bearing-fruit spurs, be occasionally cut out. In both young and old full-grown trees, where a supply of new wood is wanting in any part, leave some of the strongest of the last year's shoots, and retain well-placed shoots in vacant places, between older branches, to train in by degrees to be ready for a supply upon occasion.

Those who prefer good crops of fruit to the beauty of the tree, allow almost all the breast wood of the *may-duke cherry* to remain from year to year, which forms an ugly but a very fruitful bush. And in pruning morello cherry trees, always take care to leave every year a plentiful supply of the last summer's shoots in every part of the tree, at the distance of three or four inches, as this kind of cherry produces its fruit abundantly upon the last summer's shoots, as well as upon small spurs on the two or three years' branches.

Cherry trees are well adapted for espaliers or for standards; in the former case, as well as when trained to a wall, they are readily covered over with a net, as a protection against the depredations of birds. The *may-duke* is the finest of all the early cherries, and is that which is alone used in European hot-house forcing. When suffered to hang till it is quite ripe, it becomes nearly black. *Bigarreaus* are very large and fine, and they succeed against a wall, or planted as espaliers, but they answer also well for standards, being very hardy.

The cherry is a robust tree, and in the United States is seldom trained against walls or as espaliers. The old morello is subject to canker, and on that account is but seldom planted; other varieties, especially the may-duke, are liable to be *sun-struck*, as it is termed; the body of the tree nearest the sun becoming suddenly diseased, the circulation impeded, and frequently death ensues; as a preventive, it is usual to nail a board against the body, to screen it from the direct rays of the sun.

The following varieties of cherries are esteemed as among the better kinds:—

Early May-Duke,	Large White Bigarreau,
Late May-Duke,	Downton Early,
Bleeding Heart,	Downton Late,
Large Black Heart,	Black Mazzard,
Ox Heart,	Black Eagle,
Amber Heart,	Black Tartarian,

White Heart,	Bell de Choisy,
English Morello,	Montmorency,
French Morello,	Downer's Late Red,
Plumstone Morello,	Carnation,
Early Richmond,	Knight's Early Black,
Kentish Pie,	Yellow Spanish,
Napoleon Bigarreau,	Halifax.

THE CHESNUT is more a tree of the forest and lawn than of the fruit-garden, and when planted may be left to the care of Dame Nature.

The Spanish Chesnut is a handsome round-headed tree, of medium size, and produces fruit comparatively young. It should be more generally planted.

CURRANTS.—These are the favourite fruits of our cottage gardens, and are distinguished as white, red and black. We shall speak of them collectively, and afterwards point out any difference of treatment that way be required for the black. The currant is readily propagated by cuttings taken from the last year's wood in the months of February and March; you should choose a strong and sound shoot, and cut it off with a short piece of the preceding year's wood at the bottom of it. The cutting should have six joints or buds at the least, and three of these are to be inserted in the earth, which must be pressed closely round it, so as to fix the cutting firmly in the ground. Take these cuttings off with a sharp knife, so as to leave no jagged or ragged edges or bruises about the bark. They should be planted in a shady place. They will require a little water when first put in, and again occasionally when the weather is dry, until they have made shoots of about two or three inches long. The cutting makes a root in the first summer, and may be planted out in the autumn of the following year in the spot where it is designed finally to stand.

Currants will grow either in a warm situation or in the shade. Perhaps it is as well to have some placed in each of these situations, as those in the warm spot will of course come to maturity the earliest, but those grown in the shade will be the largest and of the finest flavour, being free from that disagreeable sharpness often found in currants grown in a warm or a too sunny spot. The currant will thrive and bear fruit well under the shade of other trees.

When the cutting is placed in the spot it is designed to occupy, it must not be suffered to retain any shoots or form any limbs within five or six inches of the ground, and the same observation holds good when applied to gooseberries.

There should not be suffered to remain more than from four to six shoots to become principal limbs. These shoots should be shortened at the end of the first year, and thus the number of shoots will be doubled; these should be constantly kept clear of side shoots, by every winter cutting off the last summer's wood to

within one or two buds of the limb. When the limbs have attained the length you design them to extend to, the shoot at the end of each limb must be annually cut off.

A tree, when it has thus received its pruning, appears like a rugged stick with bunches of spurs sticking out of it, for on these spurs come the fruit in immense size and quantity.

When the bush has formed a uniform head, the greater part of the young shoots must be annually taken off, leaving only the leading ones, and such as are desired to make new branches, and shortening these to four or six inches, according to their strength, always cutting them off just above a bud; for if this is not attended to, the points of the shoots will decay down to the bud, and have a very slovenly appearance. In pruning off the superfluous lateral shoots, they should not be cut close to the wood, but a short spur of about a quarter or half an inch long should be left to each; and here, as before observed, is produced the most abundant fruit. All old mossy or decayed wood must be carefully cut out, and all the shoots should stand open to the light and air. If you neglect your pruning, the centre of the tree becomes crowded with wood, and the fruit will be both small in size, and trifling in quantity. A successful method of pruning the currant has been recently adopted; a single standard stem is alone allowed to remain, and the lateral shoots are cut off to about six inches long; these becoming spurs produce the most luxurious bunches; thirteen bunches were gathered off a stem in September, 1841, which weighed a full pound. What has been said, applies equally to the white and red currant; the black currant bush is to be pruned, as we shall describe, when speaking of the gooseberry.

THE FIG TREE.—The fig is raised either from cuttings or layers, and the tree must stand against a warm wall. It is seldom much pruned, as it bleeds a great deal, and therefore it is mostly an unsightly tree; it requires a rich soil—part of the fruit on the fig is hardly formed, when another part is ripe. Thus a succession of fruit is produced, till the frost sets in. In fine warm summers the fruit is rich and good, but generally it has a mawkish taste. Whatever pruning is given to the fig should be done in March, the whole supply of young shoots being left till this time. They bear only on the young wood, that is, the one year old; and therefore a good supply must be left of the last summer's shoots, which must never be shortened; prune out the superfluous shoots and long-extended old wood. Take care always to retain some young shoots near the bottom, to take the place of the old naked branches that will occur. The young branches of these trees ought not to be shortened or topped, but be left at full length, only cutting off dead ends. March is the best month for removing as well as pruning these trees.

The Italians, when they wish to forward the ripening of figs, drop a little sweet oil from a quill into the eye of the fruit; but in

this operation care must be taken not to hurt the skin, which would make the fig burst. It is said that this will make a fortnight difference in the ripening. In November any autumnal fruit remaining on the trees should be pulled off, as they will not ripen, but injure the next year's crop.

Filberts are either raised from suckers or layers. They may occupy with advantage the border near the outer edge of the garden, to form a low screen, as they should not be allowed to attain any great height. They should be pruned annually, taking out all the dead wood. The fruit should be suffered to hang till it in ready to drop out of the husk, and until the bud end turns white, or it will not keep well, as the kernels shrivel up when gathered.

Gooseberry.—This is a fruit which, like the currant, with which it is generally associated, will grow in nearly any soil, and is found in almost every garden; it may be propagated either by cuttings or from seed. The best time for taking cuttings is in November; they will, however, grow if planted any time between that month and March or April, but those planted in November or December produce the best plants, and are least liable to fail. Cuttings must not be taken from the root-suckers of the same year, but from shoots of a medium size, taken off about a foot or more in length; the top must be cut off, as must all the buds but four. Two or three shallow notches are to be made in the bark at the root end; these cause root-fibres to sprout out. The cuttings should be cut straight off, and all the buds except four or five, be taken off. If you cannot get longer, cuttings of five or six inches long, having only two or three buds, will be found to succeed. Cuttings may at first be planted out on a piece of ground prepared for them, at only a few inches apart, and after they are rooted to be moved out into the nursery-bed, the soil of which should be rich; they are to be planted out in rows about two feet apart, and the plants one foot asunder. In the second year they may be removed into the place they are finally designed to occupy. On this removal all superfluous shoots should be taken off, leaving only two on each of the four leading ones, and heading these down to six inches; there will thus be formed eight shoots to make a head. When the trees are well formed, and have the required number of branches, a very different system of pruning is to be pursued. Shortening the principal shoots would now be injudicious, except with such as are growing too vigorously, inclining downwards, or pointing towards the centre of the tree; otherwise the leading shoots should never be stopped, for the gooseberry has a tendency to produce too many young and useless shoots, and heading them down would only increase this tendency. In cutting out the superfluous shoots, they should be taken off within an inch of the stem. To keep a succession of young trees, which is desirable, as old ones neither bear nor look so well, it is advisable to plant a few cuttings every year to replace old or decayed stocks.

The gooseberry-tree admits of training in a variety of fanciful ways; it may be trained in the form of a fan, of an espalier hedge, or somewhat of the form of a funnel, by cutting out the centre branches to admit light; or they may be trained as standards. When the fruit is to be gathered green, the bush should be allowed to grow thick, as the more numerous the branches, the more abundant the fruit; but when the fruit is designed to hang till it ripens, the centre of the bush must always be left open to admit light and air. The best mode of training, however, is to permit the tree to form a compact bush, and by this method the greatest quantity of fruit will be produced. The new shoots produced by old trees will be very short, and when the fruit-spurs have borne for two or three years, it will be advisable to cut them out. A few very large gooseberries may be procured from each tree, by gathering the principal part of the fruit in an early stage of its growth, leaving only a few on each branch; for prize gooseberries all but one berry on a branch is removed. It is requisite to dig about the trees in autumn or early spring, and give occasionally some well-rotted manure. There is a particular kind of caterpillar, which is a sad enemy to the gooseberry-tree; after devouring the leaves during the summer, it goes into the earth, and lives during the winter in a pupa state. The young leaves in the spring should be carefully looked over, and eggs destroyed; they will be found along the under ribs. Liquid manure from the stable or chamber, it is said, will destroy the grub, but if it does not, it will invigorate the bush.

The finer varieties of European gooseberries do not succeed well in the climate of the United States, except in local situations. In the cities of the middle and eastern states they are produced in high perfection, but in the country immediately around they are, like the grape, subject to mildew, and no system of management appears to screen them from its attack. Perhaps frequently syringing the foliage and fruit with a solution of whale-oil soap would prove beneficial.

Medlars are propagated by grafting on pear or crab-stocks. They are not held in much estimation, but sometimes occupy a place in the shrubbery; they are commonly raised as standards, but occasionally they are trained as espaliers, in which case the fruit is larger. The medlar may be treated as the apple or the pear; there are two varieties in common cultivation, the English and the German.

The Mulberry.—This tree is raised from seed-cuttings or layers, and then planted out like an apple or pear-tree: it should stand in the lawn, or at least have a grass-plat under it, as the fruit is never so good as when it hangs on the tree till it is sufficiently ripe to fall, and to fall on mould would spoil the fruit. The tree grows to a great size. There is a white mulberry, common in France, on which the silk-worm principally feeds; the red or

purple is that which is best known in this country. The soil most congenial to the mulberry is a rich, light and deep earth.

The Nectarine is a fruit that is closely allied to the peach; differing from it principally in having a smooth skin and being more difficult to bring to maturity. The methods of pruning, training, &c. have already been detailed under the article *Apricot*, and anything further to be said will be found under the head *Peach*.

These trees are very liable to be affected with the blight; to preserve them from which, when the trees come into flower, they should be washed with clear lime and sulphur-water mixed with tobacco-water. It may be prepared by procuring three butts, of a size answering to the number of trees to be dressed; in one of them put about half a bushel of unslacked lime, and about two pounds of flour of sulphur, and fill up the vessel with clear water, and stir it up. In the other put about four ounces of tobacco, and fill that also with clear water. When these two butts have stood two or three days, and the water in them has got clear, the third vessel may be filled out of the other two, using two gallons of the lime and sulphur-water for one of the tobacco-water. This mixture may also be applied to peach-trees, and the best mode is with the syringe. When the third vessel is filled in the proportion just stated, the other two should be filled up again with clear water and well stirred about, and when clear, may be mixed again as above; but after three or four times, some more of the ingredients must be added, or it will get so weak as to be of no effect. A solution of whale oil soap has been used with good results; when it cannot be obtained, syringe with a solution of common soft soap: much benefit will be found to ensue; the foliage will be cleared of insects, mildew, &c. It is said to restore trees when attacked by the disease popularly termed *the yellows*.

The varieties of nectarine in common cultivation do not exceed a dozen; those most generally known, and it is probable therefore the better kinds, are, Red Roman, White Roman, Large Early, Elruge, Temple, Vermarsh, Golden, and Fairchild's Early. They are frequently grown to great perfection in favourable situations in city gardens, especially when trained against walls, but seldom succeed in the country; partly owing to their early flowering—the blossoms being injured by frost and high winds, but principally from the attack of the *curculio*, which from some cause abounds to a much greater degree in the country than in town.

Peaches.—The peach is, next to the apple, the fruit of America; it succeeds in nearly all sections of our widely extended country, and in seasons which are termed fruitful, or when the blossoms and embryo fruit escape the frost, it is in such profusion as to be happily within reach of all. The disease termed the *yellows*, to which the peach is subject, it is difficult to account for, and still more difficult to cure; various remedies have been suggested, among others to syringe the foliage with a solution of whale oil soap, but

it is probable the only truly effectual one, is the summary process of removal. The disease appears to be infectious, and it is therefore the safer course to exterminate every tree thus effected. Another enemy to the peach is the *grub*, which works its way between the bark and the wood near the root, and into the root. If permitted to remain undisturbed, it lacerates the tree, and interrupts a healthy action; to eradicate it, open the ground down to the crown of the roots, and as much lower as you can go without injuring them, and wherever gum has exuded, gently probe the worm path with a pliant wire, when in most cases you may puncture and kill it. The peach thrives in nearly all soils, but the fruit is of finer flavour on light land; on very heavy land, and where fine fruit cannot readily be procured, it would be well worth while to form a compost of light soil for a few trees.

The following directions for training peach-trees against walls, &c. may be useful to some of our readers:

Peaches are so similar in their nature and management to the apricot and nectarine, that the directions already given under *Apricot* must be referred to, but what follows will be found more particularly applicable to the peach.

When the buds of young peach-trees, of one year's growth, begin to shoot, you may head them to five or more eyes, according to their strength; then rub on a little cow-dung and urine, observing to make the cut sloping, and as near the top buds as may be, and also rub off the fore-right shoots. When the young shoots have strength, nail them to the wall to prevent their being broken off by the wind. If the leading shoot be very strong, pinch off the top, about the beginning of June, which will make it throw out some fine strong shoots. None of the shoots should be suffered to grow unequally long during the first and second years, which may always be prevented by pinching the ends of them; but they should never be topped when the tree sends out fine proper shoots till the spring following, when you may prune them according to the strength of the tree, and the quantity of wood it has made during the preceding summer, leaving the shoots from six to twelve inches long, by which means you will be able to fill the lower part of the wall. It is too common a practice to lay in the shoots at full length, taking off only the points of the branches; this generally, after a few years, leaves the walls quite naked, whereas, if attention is paid to the training, particularly for the first four years, you may always fill the walls with fine bearing wood from top to bottom, and the tree will produce much more fruit, and of finer quality than when it is run up after the old method, for trees treated in that manner are generally so weak that they have not strength to bear good fruit. The third year, if care be taken in summer to manage them properly, they may be brought into a bearing state. When the ground is strong, they will grow very vigorously, and in that case, all the young shoots must be pinched off about the

middle of June; this will make them throw out side shoots, which if not laid in too thick, will make good bearing wood for the next year. Weak shoots should never be nailed, even though they be full of blossoms, as they never bear good fruit. Weakly trees are sometimes covered with blossoms, but if much fruit be suffered to remain on them, they will be weakened so much that they may never recover; when, therefore, such trees are too much loaded, pick off the greater part of the fruit to allow the tree to gain strength. When you prune such weakly trees, never prune at a single flower-bud; if you do, it will be sure to kill the shoot, or at least it will die as far as the next wood-bud.

The following varieties of peaches will afford a succession of fruit of the best description. The Philadelphia market has long been celebrated for the profusion and exquisite quality of the peaches, and the kinds enumerated are among the most esteemed:

Large Early Rare Ripe,
Early Newington,
New York Rare Ripe,
Red Cheek Malacoton,
Yellow Nutmeg,
Morris' White,
Troth's Early Red,
Oldmixon Cling,
Washington Rare Ripe,
Teton de Venus,
Rodman's Cling,
Tippecanoe,
Ward's Late Free,
Lemon Cling,
Strawberry,
Kennedy's Carolina,
Late Heath.

THE PEAR is very similar to the apple in its nature and habits; it is a delicious fruit, by no means sufficiently cultivated in this country, and it is only in the older settled sections of the Union that a fine pear can be usually procured. It is true that some of the ordinary varieties may be found wherever the apple is grown, but those improved sorts, the result of accident or judicious crossing, are still unknown. The day is however coming, when our tables will be supplied with an uninterrupted succession of pears, as they are at present with apples, commencing in July, and continuing until April or May. The *blight*, that fatal enemy to the pear, unfortunately still holds sway, but we may indulge the hope, that the investigations into vegetable physiology, may one day disclose the mystery of its action, and point out a remedy. With the exception of that disease, if it may be so termed, the pear is healthy; occasionally the fruit of certain kinds, in local situations, crack, but the tree itself is of hardy habit; and the melting delicacy of a high-bred pear should incite to enlarged culture. *The standard* form is that most usual with us, and where the head is kept open so as to freely admit the sun and air, the fruit is found as perfect and well-flavoured as on espaliers; the latter, however, is the favourite mode in Europe, and may be pursued here with advantage under certain circumstances; the method of treatment is herein fully pointed out. A new and beautiful method of training pears has

been adopted. The main stem is allowed to rise in the centre, and branches opposite to each other are suffered to grow on each side, bending over arch-wise. Thus there are two sets of overhanging branches, somewhat espalier fashion; these branches being perfectly exposed to the air on each side, are very fruitful, and the tree takes little room, and, like the espalier, is adapted for the sides of paths, &c. Large kinds of pears are sometimes trained against a wall, and the branches turned over to the other side; in this case expect no fruit on the root side, but abundance of fine fruit will be produced on the other.

Many kind of pears are natives of France, &c. and being tender, deserve the protection of a wall, against which they succeed much better than the apple. The proper stocks for pears, are pears raised from the pip—quinces raised from cuttings or layers—or white-thorn raised from the stones. When designed for walls or espalier trees, quince stocks are the best, because they do not force up such large and lofty wood as the pear stocks. The white-thorn is a very durable stock, and is best when dwarfs are desired, but it is apt to send out suckers, and is not so fruitful in the early stages as the quince stock.

Pear-trees which are grafted in the spring do not always succeed. In May, if you perceive they have not taken, cut them off a little below the graft at a joint or bud. The stock will then throw out a great number of healthy shoots; rub these all off except so many as will be sufficient to fill the wall, nailing them up to prevent the wind from breaking them. About the latter end of July the shoots will be fit to bud, which should be done about that time; for direction for this, see the article BUDDING.

The pear against walls, or in espalier, should receive its pruning at the latest in February. In March any young dwarf pears which have been recently planted against walls or espaliers, should be pruned down to a few eyes. If the heads of these trees are but one year's growth from the bud or graft, let them be shortened to four or five eyes, observing to do it just as they begin to form buds for shooting. If they are two years from the bud or graft, and the first shoots were cut down last spring, let the shoots which were produced from them last summer be also shortened to six, eight, or ten inches. It is on shortening properly the first and second years' shoot, from the budding and grafting, that the whole success of these trees, as well as the apricots and peaches, depends. But in the common course of pruning, their shoots and branches are not to be shortened; for after the young trees are furnished with a proper supply of branches below, their shoots must be trained to the wall at full length, only shortening particular shoots where more wood may be required. In these trees there is not a necessity to leave such a general supply of young wood as in peaches, &c., which bear only on one-year old wood; the branches of the pear are at least three years old, but are sometimes four or five

before they begin to bear, and when they have arrived at a fruitful state, the same spur branches continue to bear more and more for many years. The management of the espalier has been amply detailed under the article APPLE; but it may be proper to observe that the distances that are to be allowed for general planting, must be rather greater in the pear than the apple, from fifteen to eighteen feet being deemed sufficient distance for these, though the pear, particularly when grafted on a free-growing stock, will require twenty feet at least, whether planted in espalier, &c., or against a wall.

When the fruit has attained its maturity, the remaining care is to gather it in a way that it may be preserved for the longest possible period. To effect this, let the fruit be gathered on a perfectly dry day. Be sure to let the fruit be quite dry before you begin to pull it. Pears which are designed for keeping should hang their full time, particularly the autumnal sorts, that is, till at their full growth, but not dead ripe. Those intended for long keeping should be gathered in a little before they are ripe. Winter pears and apples should in general be gathered in October; to know when they have attained their full growth, try several of them in different parts of the tree by turning them gently upward; if they quit the tree easily, they are ripe, and it is time to gather them. But none of the more delicate eating pears should be suffered to hang longer than the middle of October: for if they are once touched by the frost, it will occasion them to rot before they are fit for the table. They should be carefully gathered one by one, laying them gently in a basket that they do not bruise one another. Let the choice fruit be wiped carefully, and laid up on shelves, &c.

The following varieties of pears described by Coxe, embrace such as ripen in succession, and are of unquestionable good quality. Very many new kinds have been introduced within a few years, but they have not in numerous instances equalled their European character; some of them have proved particularly liable to the *fire blight*, and of others the fruit cracks. Our climate is certainly not the most favourable to the pear, but a careful observance of those kinds which succeed best, and the increase of varieties from seed, the young trees being thus acclimated, will, it is hoped, in time overcome the impediments which exist.—

Early Catharine.—This is more generally admired than any summer pear—it is remarkably fine, rich, waxy and luscious: its form is somewhat like a calabash, with a long curved neck, and a long fleshy stem; the skin is on one side yellow, the other a rich russet, or brownish red; the tree grows to a large size before it bears; it is then very fruitful. The limbs are long, and when full of fruit, hang like a willow; this pear should be always suffered to hang on the tree till ripe; the growth of the tree is very vigorous; the size large; the time of the fruit ripening is about the middle of July.

Madeline.—This is a very fine early fruit—the size is small, not much larger than the Hativeau, the skin green, the flesh juicy, buttery, and highly flavoured—the taste, when not too ripe, sugary. This pear Mr. Prince calls the early Chaumontel; it is one of the finest fruits of the season.

Early Summer Bergamot.—This is one of the finest pears of the season, when eaten before it is too ripe. The skin is green, full of small russet spots, but when fully ripe it becomes yellow; it is a highly flavoured juicy fruit if gathered from the tree, but when too ripe it becomes dry, and loses its flavour; the size is small, of a round form, the flesh is rich and sprightly—it is the least vigorous pear tree in our country—of moderate size and great hardiness; free from blight—the fruit in perfection from the middle to the end of July.

Fin, or D'Ete.—This is a very fine and beautiful pear—the size is small, the form nearly round—the blossom end flat, the stem almost an inch long, growing a little on one side—the skin has a small degree of roughness; of a rich yellow on one side, and on the other a brilliant red, dotted with yellow; the flesh rich and juicy, breaking, and highly flavoured; the growth of the tree vigorous, with long hanging limbs—in perfection about the twentieth of July.

Julienne.—Is a pear of about the common size in good ground, but smaller in a less rich soil, or on old trees; it is of a round form, a little extended, and diminishing towards the stalk, which is short and rather small—the skin is smooth, when fully ripe, of a bright yellow, sometimes with a faint blush towards the sun—the flesh is sprightly, rich, and juicy if gathered before fully ripe, and kept a few days in the house; it bears young and most abundantly—the appearance and qualities of this pear, have obtained the name of the butter pear of summer.

Musk.—This excellent and popular pear is less than the medium size—the form is oval, a little produced towards the stem, which is short and thick, the blossom end round and even; the eye large—the skin a greenish yellow, with a brilliant cheek towards the sun, sometimes red, sometimes brown, spotted with small dots in every part; the flesh is half breaking, fine, and of a high and very peculiar musky flavour, whence it derives its name in common use. The tree is remarkably vigorous, grows with long shoots like the Catharine, from which it is often called the late Catharine, or autumn Catharine; it does not bear till large, it is then very fruitful; the time of ripening in August and September; it is eaten in the highest perfection when fully ripe from the tree.

Seckle Pear.—So called from Mr. Seckle of Philadelphia, the proprietor of the original tree now growing on his estate near that city—it is in the general estimation of amateurs of fine fruit, both natives and foreigners, the finest pear of this or any other country;

it is believed to be a native fruit, produced from the seed of a fine pear (of which the original proprietor owned many varieties), accidentally dropped where this tree now grows. The form and appearance vary with aspect, age, and cultivation—the size generally is small, the form regular, round at the blossom end, diminishing with a gentle swell towards the stem, which is rather short and thick; the skin is sometimes yellow, with a bright red cheek, and smooth; at other times a perfect russet, without any blush; the flesh is melting, juicy, and most exquisitely and delicately flavoured; the time of ripening is from the end of August to the middle of October. The tree is singularly vigorous and beautiful, of great regularity of growth and richness of foliage—very hardy, and possessing all the characteristics of a new variety.

Holland.—This is rather a large pear, of very irregular form, the skin is green, with a number of indistinct spots, and small russet clouds—the flesh is remarkably juicy, delicate and luscious, melting and sprightly, of a greenish white cast—it is very wide at the blossom end, lessens suddenly to an obtuse point at the stem, with an uneven though smooth skin—the stalk is very long; few pears are more admired at a season when fine pears are common—it ripens in September and October; the tree is of strong and vigorous growth, with long branches, the foliage luxuriant—it is a great and uniform bearer; it was imported from Holland by the late William Clifton of Philadelphia.

Yellow Butter.—This pear, in the opinion of many good judges, is on a par for excellence of flavour with the Seckle—it is large, fair, handsome, melting, juicy, and delicately flavoured; to have it in perfection, it should be gathered before fully ripe, when it begins to turn yellow, and be kept some time in the house, or otherwise it will lose much of its juicy and melting qualities; it is round and rather oblong in shape, somewhat diminished towards the stem, which is short and thick; the flesh white and singularly cold, the skin a bright yellow, sometimes with a blush, at other times covered with a bright russet; it is in season from the beginning of September to the first part of November, when carefully preserved, by gathering with the hand in dry weather; it is a never-failing and abundant bearer, and produces fruit at an early age.

St. Germaine.—Is a fine winter pear, by many erroneously called the green Chissel, (which is a summer pear) the size is large, of an irregular form, generally diminished towards the stem, and sometimes towards the crown—the skin is green till fully ripe, and very thick, whence it is often called the walnut pear; the stem is short, and generally planted in an oblique direction, the crown is large and not much sunk; the flesh is very highly flavoured, rich, juicy and sprightly beyond any other pear when the season is favourable; it ripens in November in a close warm situation, it is

frequently kept till late in the winter by care and attention. It is to be regretted that the tree is very subject to the fire blight, so destructive of the finest and most delicate pears in this country.

Muscat.—Is a very fine winter pear, ripening in November, and in good seasons continuing in perfection during the winter, when it is of much superior quality to that of ordinary pears; the blossom end is wide, and very flat, so as to appear almost triangular in profile, diminishing suddenly at the crown, with a very long stem; the skin is rough and green, with black clouds and some russet—the flesh is yellow, rich, buttery, and of a sprightly flavour; it ranks among the most estimable pears imported from France: the tree is vigorous, of large growth, and very fruitful—there is a peculiarity in this pear worthy of notice; the eye is very small, frequently naked, entirely without the flower leaf.

L'Echasserie.—This pear is of the medium size, an oval form, diminished towards the stalk, the blossom end very round, the eye not sunk, the stalk is large: the flesh is melting, buttery and fine. the juice sweet, musky and very pleasant—the skin is of a light yellow, inclining to white; its maturity is from November to February—and it is an excellent pear; the tree is very handsome and fruitful, and is an early bearer.

Bensell's Winter.—This pear takes its name from the original cultivator, near Philadelphia. It is a large full round pear; the skin yellow, the flesh firm and juicy, somewhat astringent—it is a fine keeping fruit, and a great bearer.

Crasanne.—This pear is among the most estimable varieties; it is generally of the medium size, but on young trees and rich ground it sometimes grows large—it is of the Bergamotte shape, rather round, the skin, when ripe, a greenish yellow, full of distinct black dots, very thin and tender: the flesh is singularly melting, rich, juicy and sweet, but not sprightly—it is sometimes in France called the flat Beurreè; it ripens in October after the yellow Beurreè, and, with care in gathering it from the tree when dry, will keep a month or six weeks in the house; it is a great bearer, of vigorous growth, and hardy; I know few pears more deserving extensive cultivation.

Bon Chretien.—This is a very large pear, of the form of a truncated pyramid—the blossom end is much swelled, the eye deeply sunk in a furrowed cavity, which forms angular ridges, extending themselves to the body of the pear; the end towards the stalk is much diminished, without being pointed—it terminates obliquely: the stalk is about an inch long, and fleshy—this pear is sometimes six inches in length and four in width; the skin is a finely grained clear yellow, approaching to green on the shady side, with a bright red towards the sun—the flesh is fine and tender, though breaking, very juicy, mild and sugary—sometimes odoriferous and vinous;

it is ripe in January, and lasts till spring; the leaves are of moderate size, the foot stalks of great length.

Plums.—Plums are more generally budded than grafted; but they may be and are, sometimes grafted; the stocks for budding plums must be raised from the stone of the plum. It is in almost all cases reared in this country as a *standard*, or self-supported tree; of robust constitution, it seems to thrive on all soils, and in all situations, and were it not for the *curculio*, which deposites its eggs in the embryo fruit, we should have plums as plentifully as cherries. The Pennsylvania Horticultural Society some years since made a liberal offer for the discovery of some protection against its attack, but though various methods have been suggested, none it is feared are fully efficient. In the cities the plum is less liable to its attacks, and fruit of the most tempting character is there grown. The annual exhibitions of the society just referred to give evidence of what might be within our reach if it were not for that insect pest. The trained or espalier mode is the favourite one with the plum, as with most other fruit trees, in England; and though we think but little is to be gained by it here, so far as the plum is concerned, still it may not be amiss to present some extracts on the subject.

The plum does not require so much room as other wall trees, nor yet so much as pears or apples in espalier. They seldom bear on the last year's wood, but generally on spurs. The same treatment must be observed in their pruning and training as that recommended for the apricot. Plums are generally placed against a wall facing the east, west, or north, and the *greengage* grows finer trained against a north wall than when it has a southern aspect. It is, perhaps, not quite so sweet, but it grows larger, comes in more by degrees, and is of finer flavour than when exposed to a hot sun.

When plum trees have become barren and unsightly, they may be brought into good form and fruitfulness by being cut down. When, after this operation, they shoot forth in the spring, the shoots should be regulated as regards their number and position. If any of the shoots grow too long, which they are very apt to do, stop them by pinching off their extremities, which will check and cause them to produce wood of a more moderate growth and likely to be sooner fruitful. Much depends on the early management of a tree in giving it a good and regular form, and by this method you will keep the trees in a flourishing state: when the branches are thus managed, they will frequently throw out small spurs or fore-right shoots about an inch or two long, which will flower the next year. They should never be shortened till after the fruit is set, and become about the size of a large pea; by that time the leaves will have grown large enough to cover the fruit, and will be able to protect it from the inclemency of the weather. You may then shorten these shoots close to the fruit, which will leave them

from one to two inches long. Where it is convenient, one wall should be allotted for plums and another for cherries, as they will thrive best by themselves.

October is the best month for putting into the ground a few plum-stones in order to raise stocks for budding. A dry, light, mellow soil is the best; the earth must be dug and prepared into a bed three or four feet wide: take an inch or two of earth evenly off the top, then sow the stones moderately thick, press them into the surface with the spade, and cover them in with earth about an inch and a half deep, in a regular manner. Cherry-stones are to be sown in the same way. It is a good method also to preserve some plum-stones in sand till spring, as a reserve, in case those sown in October should be destroyed by vermin, or severe frost. A large garden pot will do for this purpose, covering the bottom three inches deep with dry sand; then scatter in a parcel of the stones, and cover them two inches deep; then scatter in more stones, covering them also with sand. You may thus preserve as many as you please, for stones thus treated will keep securely till the middle or latter end of February, when they must be sown in the nursery bed as directed above.

Among the more desirable kinds of plums grown in this country may be named the following:

Cowperthwaite's Reine Claude,	Green Gage,
Holland Prune,	Magnum Bonum,
Keyser (Huling's Superb),	German Quetzer,
Imperial Gage,	Yellow Egg,
Coe's Golden Drop,	Bingham's Yellow Egg,
Bolmar's Washington,	Copper.

Quinces are used as a flavour with apples, and make an elegant preserve or marmalade. They succeed very well as standards, and are sometimes planted in espalier to form a variety among other fruit trees; they are trained and managed in the same manner as the apple or pear. The grub at the root is apt to attack the quince, and therefore it is prudent to examine them once or twice during the season, and with a pliant wire probe the channel formed by that insect—in doing which it will generally be killed.

There are three varieties in cultivation: the Orange, the Portugal, and the Pear-shaped.

The Raspberry will grow in almost any soil, but will not bear well unless planted in good rich earth, and having a plentiful supply of manure once in three years. The ground should be well trenched out before planting, and October is the best month for this operation. Three, or at the most five off-sets may be planted together in a clump, each clump being five or six feet from the other, or they may be planted in rows, east and west, about four feet apart. If you are not anxious for fruit the first year, cut the plants down to within six inches of the ground, and much finer

and stronger suckers will be formed. When taken up to be planted, the roots should not be suffered to dry in the sun. The largest raspberry is the Antwerp. It is distinguished principally as the red and white, but there is also a very fine yellow kind. The shoot that has borne dies down to the ground in the autumn, and its place is supplied by off-sets that spring up during the summer; these are the bearing plants of the next year: from three to five may be left, being shortened down to about five feet; but the weakly ones should be removed, as also the dead wood of the last year. In November and March, all the ground round them should be carefully digged, and the weeds be kept down all the summer. The stems should be slightly bent towards the centre, and tied loosely by a piece of bass to a stake, to prevent their breaking off with the wind. They should be shifted into new soil once in four or five years, as they deteriorate the soil by an excrementitious slime which they throw off. When loaded with leaves and fruit, the stems require to be supported by a stake. They require a good supply of water in a dry season, from the time the blossom begins to fall, and they will bear well if shaded from too strong a sun. The Antwerp raspberry does not succeed as well in this country as in Europe; and though our native varieties produce fruit of much smaller size, they are more certainly to be relied on.

Strawberries are amongst the most delicious fruits produced in this country; they are general favourites, and are easily propagated. There are many kinds, but the mode of management requisite is the same for all, except the Alpine, which is raised from seed. The soil best adapted for the strawberry, is a strong rich and adhesive loam, retentive of moisture; drought is a great enemy to them; but any soil will produce strawberries, whether it be rich or not, if it be not too dry. In preparing a bed, care should be had to trench it well a foot and a half deep, and to dig in a good supply of well-rotted dung, with the earth brought to the surface.

The off-sets of the first spring runners should be planted out in the first week in August; those which are large and healthy should alone be selected, and there are always enough produced to prevent the necessity of using small ones. Old stoles which have borne once, (those which have borne twice should be thrown away), may be replanted any time between March and October. Off-sets may be planted along the side of the beds near the edge of the walks, and make a pretty and useful edging; they should be placed about ten inches apart, and if two rows are planted, the second row must be placed at fifteen inches behind the first. These should be kept clear of runners, or they will soon smother up the beds; indeed all runners should be cut from the strawberry plants during the first year. An excellent way is to plant strawberries in clumps of three or four together, six inches between each plant being allowed, and the clumps standing three feet asunder.

Beds with four rows each, and two feet allowed between the beds, for the growth of cabbages, is found to answer well; a good situation for strawberries is where they have the shelter of dwarf apple, pear or other trees, which are planted along the side of a walk; a bed of about three or four feet wide may be planted beneath these trees, without either injuring or receiving injury from them. They may be planted in two or three rows, and may be allowed to spread and extend themselves over the whole surface of the bed, cutting off such as are disposed to wander beyond the prescribed limits. These beds being thus protected from drought, generally produce well, and longer than in single rows.

When strawberries are planted, it is requisite to fix the roots well in the ground, or they are liable to be thrown out by the frost, or be drawn out by the earth-worm. If it be dry, they must be abundantly supplied with water, particularly just as the blossom sets, not by merely sprinkling a little over the surface of the whole bed, but by giving a copious supply to each root, twice a-day; but not wetting the blossoms. They must be kept clear from weeds, stirring the earth with a fork, not a spade, and not going so near as to disturb the root: birds, snails, and slugs, must be guarded against. When the fruit lies too near the earth, a piece of glass, tile, or slate, may be laid under the bunch to keep them from the sandy particles, or a little hay-straw, or dry moss may be laid under them.

There are many varieties of the strawberry known around Philadelphia, but the old Hudson is most generally cultivated; the male and female flowers in this kind are on separate plants; and as the former is the most robust, care must be taken to prevent its taking entire possession to the exclusion of the fruitful vines; the want of attention in that particular, is the cause of frequent failure in the cultivation of this delicious fruit. Keen's seedling, and Hovey's seedling, both produce berries of enormous size; we have measured the former five and a half inches in circumference; they (Keen's and Hovey's), have each flavour *perfect*, but advantage has been found in mixing with them the male plants of the Hudson.

The Grape Vine is propagated from cuttings or from layers: a layer is a shoot from the vine, laid into the ground, having a sloping cut made in the under-side of it through a joint. When the slit is properly made, and the shoot layed into the ground, the fore part of the shoot is then to be tacked to the wall, or to a stake driven into the ground for that purpose. This operation is to be performed in the spring, and in the fall of the year it will have become a young vine with a good root to it; but as vines do not remove well, it is best, in February, to lay the shoot down into a large garden-pot, plunged into the border, and three parts filled with earth: put a good straight stick down into the flower-pot, at the same time put a peg to prevent the shoot from rising up, and tie the top of the shoot to the stick; then fill the pot with earth, and press it down well, so as to lie hollow in the middle, to

retain the moisture: soon after this has been done, cut off the fore-part of the shoot to within a joint or two of the ground; tie it firmly to the stick, and when it makes shoots tie one of them to the stick and cut the other way. At the end of autumn cut the layer from the vine and take up the pot, and the young vine is ready to place in any situation required. You must make a hole for this purpose, and turn the ball of earth out with the vine, in the same manner that you planted out the melons. The vine may be thus transplanted any time before the middle of February, and when it is put into the earth it should be cut down to within two or three buds of the ground.

Vines are also propagated by cuttings, which should be taken for this purpose before the middle of February, and should be shoots of the last summer, with an inch or two of the last year's wood at the bottom of them, though this is not indispensable; but the cuttings must have four or five buds or joints. The ground to receive the cuttings must be made rich and fine, dug deep and well prepared. Then each cutting is to be put in with a setting-stick, leaving only two buds or joints above the ground; the cutting must be planted firmly in the ground.

There is another method of propagating by cuttings, but it is not so commonly adopted. At about the same time you would take a cutting in the manner last directed, take a bud of the last year's wood, cutting all the wood away, except about half an inch above and as much below the bud, shave off the bark and a little way into the wood at the back of the bud of this inch-long cutting; then bury it two inches deep in a pot of good earth, taking care to keep the bud in an upright position: you need not hesitate to cover the bud over, as it will shoot through the mould, and the place where you scraped off the bark will send out vigorous roots, and thus produce a healthy young vine, to be managed in the manner directed for cuttings above.

The vine is a creeping plant, throwing out the most luxuriant shoots at the extremity of the branches, where these are laid horizontally or perpendicularly. In training it, it is necessary to keep three objects in view: first, to cover the space allotted with fruitful branches, leaving room for ripening the fruit, and for branches that are to bear the succeeding year: secondly, to take off the top of each branch bearing fruit, the third joint above the uppermost bunch, except such branches as are required to bear fruit the next year, which latter must be exposed, and by no means topped; for if the sap is checked in these, many of their buds will burst the same season, and the fruit of the next year be destroyed: thirdly, take off all laterals as they arise, and any shoots which, though laid in for fruit, turn out unproductive, that the whole strength of the tree may be called into operation.

Vines may be pruned in the fall of the year, when the sap is completely down, but not left unpruned beyond February, or the

sap will have begun to rise. When you commence pruning, always make choice of the strongest and longest shoots, leaving them as long as you find the eyes good and plump, and the wood sound: the shoots that have borne fruit, should be cut out the following year, except when you want to fill the wall, and the shoots are very strong: never leave any but fine, strong wood, always cutting at the second, third, or fourth eye; rubbing the lowest bud off, and that which comes out of the joint, between the new and last year's wood: always leave two or three of the strongest shoots for next year's bearing wood, and never top them. Vines are, sometimes, planted between trees on north and east aspects, and then trained over the tops of the south and west walls to fill the upper parts, till the peaches and nectarines cover them.

When vines are pruned too late, that is, after the sap has risen, (which should never be done when it can be avoided), the cut parts are apt to bleed excessively, which weakens the vine; in this case, it has been recommended to take four parts of scraped cheese, and one part of calcined oyster-shells, or rather pure calcareous earth, which, being mixed, must be pressed into the pores of the wood, and it will immediately stop the flow of the sap; another method is, to cover the wound with white lead, in the form of paint.

Vines require summer as well as winter pruning, and by the latter end of May, those against walls should be looked over, as by this time, in a forward season, numerous spring shoots will be advancing, and the useless ones should be removed, as the small shoots from the old wood seldom produce grapes, and should therefore be rubbed off, except in places where a supply of new wood is required. But leave, at this time, all the shoots which spring from the last year's wood; and if the two shoots arise on one joint, rub off clean, with the finger, the smaller of the two. Train the remaining shoots, as they attain length, close to the wall, regularly, so that they and the fruit may enjoy both sun and air.

By thus regulating the vines early in the spring, the grapes will advance more rapidly in their growth, become larger, and ripen sooner, a very great advantage in our climate. As the spring advances, even strong shoots, that are destitute of fruit, and appear too numerous, or rise in places where they are not wanted, or will not train well in, must be displaced, leaving always, in every part, as many well-placed and strong-growing shoots as can be trained in regularly: nail up all these shoots close to the wall, and generally at full length, in the summer pruning, where there is room to extend them; let every shoot be laid in straight, and clear of another, in a regular manner. All tendrills and side-shoots should be cleared off as soon as they appear, which will give the fruit all the nourishment the tree affords. All these summer dressings may nearly be effected by the finger and thumb, while

the shoots are quite young and herbaceous, as in this stage all the superfluous shoots may be expeditiously removed without a knife.

Vines growing in forcing-houses may be much improved in flavour, as well as be brought to ripen earlier, by taking away circles of bark, when the fruit is set, and the grapes appear about the size of small shot; the removed circles may be made wider in the hot-house than on vines growing in the open air, as the bark is sooner renewed in forcing-houses; but weak vines will not at all admit of this operation being performed. Where the vine is strong enough to bear it, in the latter end of July, you may make inscisions through the bark on the trunk, removing a circle of bark, leaving the naked alburnum, about one or two-eighths of an inch in width, completely exposed. But all shoots which come out from the root of the vine, or from the front of the trunk, situated below the incision, must be removed as often as they appear, unless bearing wood is particularly wanted to fill up the lower part of the wall, in which case one or two shoots may be left. About ten days after the operation has been performed, look on the part from whence the bark has been removed, and separate any small portion which may have escaped the knife the first time, otherwise it will adhere to the alburnum, which must be prevented.

In August, it is requisite again to look over the vines, and clear them from useless branches; examine, also, all the bearing and other proper shoots, and see that they are well fastened to the wall, and the shoots having fruit on them may now be topped, as must others which have advanced beyond bounds.

The choice European varieties seldom succeed in this country, unless in the dry, warm atmosphere of cities. In such situations, they are frequently grown to great perfection. In Philadelphia, the grape is a popular fruit, scarcely a yard being unprovided with a vine; and the shows of fruit, at the annual exhibitions of the Pennsylvania Horticultural Society, are of the most gratifying character. For general cultivation, through *the country*, the Elsenburg, (blue), Catawba, (pale red), and Izabella, (deep purple), are much the better kinds; indeed, few others are worth planting.

Walnuts.—These trees are more fit for the park, than for the garden or orchard, but are by no means unbecoming appendages to the pleasure-ground. They will thrive in any common soil or situation: the way to raise them, is to take the walnuts when quite ripe, and preserve them in sand, as directed for plum-stones, &c. Sow them late in February, and the tree will be a foot high by the end of autumn. If it is intended to stand where it is sown, no more is requisite than to keep the ground about it clean, and to prune off the side shoots at the bottom, always leaving a tolerable head until you have a good trunk of a sufficient height. But if the tree is to be transplanted, you must take it up in the second autumn after sowing, not later, as it makes a long tap root, and removes with difficulty when a year or two old. When you take

the young plant up, cut off the tap-root to within six inches of the stem, and place it in the nursery for about three years, and then it will remove with a good bushy root. Keep the side-shoots pruned off, and the tree will form a good head.

GRAFTING AND BUDDING.—Grafting fruit trees is a delicate and important operation, and we will briefly describe the process, only repeating, that for private gardens, it is more expeditious to purchase the trees ready for planting out, than to attempt it. Before any stock is grafted, it ought to stand one summer in the place which it so occupies at the time of the operation; but stocks must not stand two summers, or they will have formed too large and long roots, which will suffer considerably in removing.

The operation of grafting consists in removing a branch from one tree, and inserting it on the stem of another, in such a way that the stock, on which the cutting is placed, sends up its sap into the cutting, and thus nourishes and makes it grow into a tree occupying the place of the natural head of the stock, which has been removed to make way for the graft. When a cutting is thus applied, it is called a scion.

Grafting is generally performed sometime between the beginning of February and the end of March. But the proper period of grafting depends on the nature of the season, whether it be a late or early one, and must be determined by the fulness and bursting appearance of the buds on the stocks, and should be regulated by the mildness of the weather, which, with occasional showers, is favourable for this operation. Choose the tree you mean to propagate or graft from, in the early part of February, and take from it as many branches of the last year's growth as will afford you the desired number of scions. If it be a flourishing young tree, take the branches from the outside shoots, as those near the middle are likely to produce more wood than fruit, but do not take them from the lowest limbs, as these are often weakly. If the tree is old, take the branches where they can be found the most vigorous, of the last year's growth. Bury these branches to the middle in dry mould, and when the time for grafting has come, take them up, and cut them into proper lengths. The middle part of each branch will generally be found the best. Each scion should have from three to six buds on it, which will be quite sufficient, as a great length of scion is prejudicial, by overloading the head of the plant with young shoots and leaves, thus rendering it liable to accident from high winds or heavy rain.

The principle of grafting, is bringing the under or inner bark of the scion in exact contact with the bark of the stock, and the nicety of the operation consists in fixing these two barks so closely one to the other, that the sap may proceed into the scion, just as it would have flowed into the branch which has been removed.

There are several methods of grafting, but the two most com-

monly practised are *tongue grafting* and *cleft grafting*. The former is used in grafting on small-sized stocks or branches, and the latter on large stocks or branches. If suckers are grafted, which is sometimes done, the tree will immediately throw up suckers, and by no means become profitable. In tongue grafting, select a strong, young stock, from three to four years old; cut it off at three or four inches from the ground, and with a sharp, straight and narrow-bladed knife, cut a thin strip of wood and bark upwards, from about two inches below the top of the shortened stock; make this cut by one stroke of the knife, inserting the edge rather horizontally, and when it has cut through the bark and into the wood, a little short of the middle, pull straight upwards; then, at less than half way down this cut, and with the blade of the knife across the cut, the edge downward, cut a very thin tongue, of not more than three-eighths of an inch long.

Proceed nearly in a similar way with the scion: cut first a narrow strip of wood and bark out, but do not put the knife in horizontally, as you did with the stock when you brought it out straight to the end, making a shoulder or angle; make a sloping cut of about the same length as the cut in the stock, or a little less; then make a tongue to correspond with that in the stock, cutting this, however, upwards instead of downwards, as in the former case; then place the scion upon the stock, inserting the tongue of the scion into the tongue of the stock; bring the four edges of the bark, that is, the two edges of the cut in the top of the stock, and the two corresponding edges of the cut in the bottom of the scion, to meet precisely. When you have fitted the tongue of the scion into that part of the stock, you should not be able to perceive the least ray of light penetrating between them. The two pieces must be bound closely to each other by matting or bass. A single piece should be tied on to the stock an inch or two below the graft, and then wound closely up till it reaches the top of the stock, and if well done, this is almost sure to effect the junction. It is usual to place a ball of well-beaten clay, sprinkled over with the fine siftings of cinders, so as to cover completely the part grafted, extending an inch above and below the parts operated upon: to prevent this ball of clay from being washed off by heavy rains, tie round it a covering of coarse convass. In about a month's time the scion will either be bursting into leaf, or be irrecoverably dead; in the latter case remove the whole, and leave the stock to push forth fresh shoots and recover itself. But if the scion has taken, as soon as the stock puts forth shoots, cut or rub off all shoots proceeding from it below the graft, or they will divert the sap from the scion; then carefully support the plant by driving in a stake about three inches from the root, long enough to reach above the scion, and tie it with a piece of matting to prevent its breaking off with the wind. When thus supported, the plant may remain till towards the end of June, when the whole of the clay and bandage

should be removed by a careful hand. The best time to perform it in is after a day or two of rain, when the clay is moist, and readily separates from the graft. On taking off the clay there will be found a little sharp angle left at the top of the stock; this is to be cut smoothly off, and the bark of the stock and scion will heal over it.

Cleft Grafting is resorted to when the stock has become large, or when it is desired to graft a branch or branches of a tree which has been headed down; in either case the part to be grafted must be sawn cleanly across horizontally, and the surface pared smooth with a sharp long-bladed knife, or else smoothed over with a plane. Then prepare the scion by cutting it about an inch and a half from the bottom into the form of the blade of a razor, by making it sharp on one side and leaving it blunt on the other, taking care to leave the bark whole on the blunt side; then make a slit in the side of the crown of the stock where it was sawn: this slit is to be carried downwards for about two inches, taking care that both sides of the slit are perfectly even; hold this slit open with a wedge, and insert the scion, placing the sharp edge inwards, and the part with the bark remaining outward, so that on taking out the wedge the cleft may close firmly upon the scion,—the two edges of bark formed by the cleft squeezing exactly upon the two edges of the bark remaining on the blunt edge of the scion: the only nicety in this operation is to make the two barks meet exactly, which they must do, as the slightest deviation would defeat the whole business.

Binding in this sort of grafting is seldom essential, as the stock is generally strong enough to hold the scion firm without, and then the binding is better omitted; but to exclude the air from the wounded part, cover it with grafting clay, and secure the clay with a piece of coarse cloth previously wetted, and bind it on securely. If the stock be a strong and large one, you may insert several different scions in the same head, in order that two may succeed; if several take, you must select the two most eligible, as more than that number ought not to be encouraged. This operation is performed at the same season as tongue-grafting, and the choice and treatment of the scion and after management of the tree are precisely similar.

The clay proper for grafting is pure yellow or blue clay; it must be beat on a clean stone, brick or boarded floor, with a stout stick, having a little water poured on it now and then to make it work. This process must be repeated for two or three days, till it is perfectly pliable in the hand. If the clay be hard when put on the graft, it may perhaps unsettle the graft in squeezing it round the part, or the first hot day would crack and render it utterly useless: let it be so loose, that it may be readily flattened out like a pancake about an inch thick, when it will be ready to wrap round the grafted tree: when it is so placed, a little wood-ashes should be

sprinkled over it to dry it and prevent its cracking with the heat of the sun.

Budding is a species of grafting, and is performed for the same purpose. The method usually employed is that called the T, or shield budding. The first designation being taken from the form of the two cuts that are made in the bark, the second from the form the piece of bark assumes which is cut off, containing the bud when it is ready to be inserted within the stock. Budding is usually performed from the latter end of July to the latter end of August, the exact time being determined by the plump appearance of the bud formed on the spring shoot of the same year, and a readiness in the bark of the stock to separate from the wood.

For performing this operation choose a bud growing in the angle of a leaf seated at about the middle of a healthy shoot of the mid-summer growth, as most generally inclined to fruitfulness; select a cloudy day, or else perform the work either very early in the morning or in the evening. Begin by cutting off a branch containing buds proper for use; hold the branch in your left hand, with the thickest end downwards, and make a sloping cut from about an inch and a half below the bud, to about an inch above, passing the knife through the bark, about half way through the wood, cutting out wood and all; retaining the wood prevents the bud from dying while making preparation. If it is requisite to carry buds to any distance, you must place their ends in water or in damp moss, but either in budding or grafting it is well to use as much expedition as possible, and particularly so in budding. Commence operation by cutting off the leaf under which the bud is seated that you intend to use; leave the stalk on, and hold the stalk between your lips, while with the budding-knife you cut two straight lines in the stock at the place where you intend to insert the bud, which should be on the side turned from the mid-day sun, and at a part where the bark is smooth and free from any bruises or knots. Make the first cut horizontally, and the second from the centre of that longitudinally downwards, thus forming the Roman letter T.

You must now take out the piece of wood which remains on the bark containing the bud; this requires care and a steady hand, lest you endanger the root of the bud, as it is called. If you perform this operation in the proper season, the piece of wood will be very easily detached from the bark. Hold the bud upon your fore-finger and keep your thumb on the wood opposite: then with the thumb and finger of the other hand, bend backward and forward the lower end of the shield, and gently coax the wood to quit the bark, and when you find that it is doing so, remove your thumb from it, and the whole piece of wood will separate, leaving the shield, which should be about two and a half inches long, with a bud and the foot-stalk of a leaf on it. If the root of the bud should unfortunately be carried away with the piece of wood, it

will have left a small cavity where it ought to have been, and you must prepare another. Then open the two sides of the longitudinal bar of the T, with the ivory haft of the budding-knife, and in doing this raise the bark cleanly down to the wood, for the inside of the piece of bark belonging to the bud must be placed directly against this: then insert the longest end of the bark nicely, taking great care that its inner side lies flatly against the wood of the stock. Then cut the upper end of the bark off so that its edge shall meet precisely the edge of the horizontal bar of the T. Then with your finger and thumb bring the two sides of the longitudinal bar over the bark of the shield containing the bud, and beginning an inch below this bar, tie a piece of well-soaked matting firmly, and bind regularly all the way up to an inch above the horizontal cut, leaving the bud peeping out. Take care that the binding is laid on closely enough to exclude the air. The binding should be wound round and round the stock like a ribbon, but do not twist the matting. Wind slowly, and at each circuit pull gently to make all firm, then tie the end tightly, but do not cut the plant. In about a fortnight you will see if the bud has taken by its healthy rounded look, and in another fortnight you may loosen the bandage a little to allow the plant to swell, and in another week you may entirely remove it. Let the plant remain thus till the spring, and then when the sap begins to rise, head down the stock at about half an inch above the bud, beginning behind it and making a sloping cut upwards to end above its point. If the tree is exposed to high winds, a stick may be tied on the top part of the stock, to tie the first summer shoot to, in order to prevent its being broken off by the wind. Budding has several advantages over grafting: it is not only more applicable to the whole race of stoned fruits, as observed before, but it may be performed in July, when the grafting has failed in March or April. Stone fruits, which have been budded, are less given to gum than when grafted, and gumming is often very detrimental. You may also put two or more branches upon a stock by budding, that would be too weak to take more than one by grafting. The only disadvantage attendant on budding, is that the trees are a year longer in coming to bear by this process than by grafting.

Inarching, or Grafting by approach, is used only for particular trees that do not propagate freely by any other method. It is mostly practised on exotic plants, and is performed in various ways, according to the kind or condition of the plant operated upon. It is usually performed by cutting similar slices of bark and wood off both stock and graft, applying one to the other, and then binding them neatly together. A very simple method of approach-grafting has lately been practised with much success: the scion to be inserted on a stock, is cut entirely off the parent tree, and is attached by its middle to a part of the stock of similar diameter, and then tied and clayed; the base of the graft hanging

below, is let into a small phial of water, whence the scion draws nutriment till the junction is complete, which will require about two months; the graft is then to be separated from the mother plant with a perfectly sharp knife, cutting off the ingrafted branch with a slope downwards to the stock, and if not done in grafting, the head of the stock must now be cut close to the graft. The old clay and bandage are now to be taken off, but at the same time it would be advisable to tie them again, gently putting on some fresh clay, which may remain for a month or five weeks. In this method of grafting, the stocks may be both in the ground or in pots; the latter is necessary when the branches of the trees you would inarch are not near enough the ground, or for the orange and other green-house trees and shrubs. Double camellias, and such plants are readily increased by inarching; the single species are used as stocks, and they are placed round the sort to be worked.

Root Grafting is only resorted to when there is a want of suitable stocks, particularly in the propagation of rare plants. From such an one a root may sometimes be spared, to which one of its own shoots may be united without injury to the original, and thus two trees be obtained.

THE END.

INDEX.

A

Ants, destruction of.... 64
Aphides, destruction of. 65
Apple-trees 77
— Bellflower..... 83
— Bough 81
— Carthouse..... 85
— Codling..... 82
— Cumberland Spice .. 84
— Early Summer Pearmain 82
— Esopus Spitzemberg. 83
— Fall, or Holland Pippin 82
— Kaighn's Spitzemberg 84
— Pomme D'Apis..... 83
— Summer Queen 81
— Summer Rose 81
— Tewksbury Winter Blush 85
— Newtown Pippin ... 84
— Maiden's Blush..... 82
— White Sweeting.... 83
— Wine 83
— Winesap..... 84
Apples, to preserve.... 81
Apricot 85
Artichoke 17
— Jerusalem..... 18
Asparagus 18

B

Balm 58
Barbary 88
Bazil, Sweet 58
Beans 19
— Broad Windsor 19
— Carolina..... 21
— Early Long Pod.... 19
— Kidney..... 20
— Lima 20
— Mazagan..... 19
— Scarlet Runners.... 20
Beets..... 21
Black Grub, destruction of 65
Borage 58
Borecole 21
Broccoli..... 21
Brussels Sprouts..... 22
Budding 112

C

Cabbages 22
Camomile 58

Capsicum 24
Carrots 24
Caterpillars, destruction of 65
Cauliflower 25
Celery 26
Cherries 88
Chestnut 90
Chives 27
Cleft grafting 111
Colewort 61
Corn, Indian 27
Corn Salad 28
Cress 28
Cucumbers 28
Currants 90

D

Dill 59

E

Egg-plant 30
Endive 31
Eschalots 31
Espalier training 79

F

Fennel 59
Fig-tree 91
Filberts 92
Fly, Turnip, destruction of 64
Fruit-garden 77

G

Garden, aspect of a ... 14
Garden, situation of a .. 14
Gooseberry 92
Grafting 109
— by approach 113
— Root 114
Grape-Vine 105

H

Horse-radish 32
Hyssop 59

I

Inarching 113

K

Kitchen Garden, monthly operations in ... 67
— January 67
— February 67
— March 67
— April 69
— May 70
— June 71
— July 73
— August 73
— September 73
— October and November 74
— December 75

L

Lavender 59
Leeks 32
Lettuce 32
— lamb's 28

Liquorice 59
Love Apple 56

M

Manures, variety and properties of..... 15
Marigold 60
Marjoram 60
Medlars 93
Melons 33
Mice, destruction of ... 66
Mint 60
Mulberry 93
Mushrooms 42
Mustard..... 44

N

Nasturtium 45
Nectarine 94

O

Observations, Preliminary 13
Okra..... 46
Onions..... 45
Oyster Plant 53

P

Parsley 47
Parsneps 46
Peaches..... 94
Pears..... 96
— Bensell's Winter.... 101
— Bon Chretien 101
— Crasanne..... 101
— Early Catharine.... 98
— Early Summer Bergamot 99
— Fin, or D'Ete..... 99
— Holland 100
— Julienne 99
— L'Echasserie 101
— Madeline 99
— Muscat..... 101
— Musk 99
— Seckle 99
— Yellow Butter 100
Peas 47
Penny Royal..... 61
Planting 80
Plums 102
Potatos 50
Pruning 77
Pumpkin 51

Q

Quinces..... 103

R

Radishes 51
Rampion..... 61
Rape 61
Raspberry..... 103
Rhubarb 52
Rookworm, destruction of 67
Rosemary 61
Rue..... 62

S

Sage 62

Salsafy 53
Savory 62
Sea Kale 53
Slugs, destruction of... 66
Snails, destruction of.. 66
Sorrel 62
Spinach 55
Squash 55
Strawberries 104

T

Tarragon 62
Thyme 62
Tomato 56
Transplanting 80
Turnips 56
Turnip or Cabbage Fly, destruction of 64

V

Vegetables, cultivation of Kitchen 17
Vermin injurious to culinary crops, destruction of 64

W

Walnuts 108
Wormwood 63

THE

COMPLETE FLORIST:

A

MANUAL OF GARDENING,

CONTAINING

PRACTICAL INSTRUCTION

FOR THE MANAGEMENT OF

GREENHOUSE PLANTS,

AND FOR THE CULTIVATION OF

THE SHRUBBERY, THE FLOWER GARDEN, AND THE LAWN.

WITH DESCRIPTIONS OF THOSE

PLANTS AND TREES MOST WORTHY OF CULTURE, IN EACH DEPARTMENT.

WITH ADDITIONS AND AMENDMENTS,

ADAPTED TO THE CLIMATE OF THE UNITED STATES.

PHILADELPHIA:
LEA AND BLANCHARD.
1847.

Entered, according to the Act of Congress, in the year 1844, by
LEA AND BLANCHARD,
in the clerk's office of the district court of the United States in and for the eastern district of Pennsylvania.

Printed by T. K. & P. G. Collins.

PUBLISHERS' NOTICE.

THE English work from which this has been compiled, was placed in the hands of one of our most experienced gardeners for revision and alteration, to suit the climate of the United States. It has, however, come out of his able hands almost a new work; and will, it is presumed, from its value and very low price, increase the growing taste for the culture and management of ornamental flowers and shrubs.

This volume will be followed by a work on the same plan, and by the same competent hand, adapted to Fruit and Kitchen Gardening.

Philadelphia, March, 1844.

INTRODUCTION

TO THE

AMERICAN EDITION.

It will scarcely be questioned, that whilst we, as a people, have greatly advanced in most of the pursuits which add to our physical and intellectual enjoyments, that a relish for Horticulture (of much importance if considered with reference to the gratification of the mind) has not increased in a ratio with that for other branches of art. Without referring to music, painting, or more particularly to many of the sources of enjoyment, which have extended and improved with the progress of our country, let us confine our comparison to architecture, with which refined taste has intimately connected two departments of gardening, namely: Horticulture and Arboriculture.

In architecture, the improvement has become so general and extended, that as a natural result, the desire for not only convenient and comfortable, but handsome habitations, is no longer confined to the more wealthy classes, but enters into the wants of the great mass of the community.

The plain, unpretending tenements, which filled the entire wish, in that particular, of former generations, are now only erected on the outskirts of our cities, or stand within as monuments of the simplicity of by-gone days. The stately mansion now rears its head, proud evidence of the result of successful industry, but in too many instances of that alone, for paradoxical as it may seem, the individual who will expend tens of thousands on his house and furniture, neglects the decoration of his garden, if indeed the desire to build in a fashionable neighbourhood has not rendered that intellectual appendage to a residence, out of the question. Have we not seen houses of the most costly character, placed in such confined positions, from a morbid desire to be conspicuous, that the extent of garden ground scarcely afforded room

for a rose-bud to expand its petals! These remarks are made with no disposition, other than to exhibit the fact stated in the commencement of this article, and to call attention to a palpable error in the construction of city residences; for without trees, shrubbery and flowers, architectural designs, however beautiful, are but half developed.

But, whilst we are criticising the inability to enjoy the charms of nature, as evinced by those who thus, of choice, live "cabined, cribbed, confined," as if the only use of ground were to cover with brick and mortar; when, frequently at less expense, they could enjoy more ample space, with the delights of a suburban garden, let us do justice to those who have exhibited for our pleasure, and as an incentive to follow their example, the beauties which they have contributed to create. And here we will take occasion to remark, that in addition "to the benefits experienced by breathing air unconfined by the close streets, and uncontaminated by the smoke of chimneys, the cheerful aspect of vegetation, the singing of birds in their season, and the enlivening effect of finding ourselves unpent-up by buildings," is a further consideration of some moment, to persons whose means admit of the enjoyment of a suburban residence; to quote the language of Mr. Loudon, "the great advantages which would result from bringing up children with a taste for garden pursuits and natural history, and the vast influence which this is calculated to have on their future happiness and the welfare of society, by enabling them, instead of passing their leisure hours in a degrading manner, to interest themselves in recreations both agreeable and useful. There is a great deal of enjoyment to be derived from performing the different operations of gardening, independently altogether of the health resulting from this kind of exercise. To labour for the sake of arriving at a result, and to be successful in attaining it, are, as cause and effect, attended by a certain degree of satisfaction to the mind, however simple or rude the labour may be, and however unimportant the result obtained. To be convinced of this, we have only to imagine ourselves employed in any labour from which no results ensue but that of fatiguing the body or wearying the mind; the turning of a wheel, for example, that is connected with no machinery, or, if connected, effects no

useful purpose; the carrying of a weight from one point to another and back again; or the taking of a walk without any object in view but the negative one of preserving health. Thus, it is not only a condition of our nature that, in order to secure health and cheerfulness, we must labour, but we must also labour in such a way as to produce something useful or agreeable. Now, of the different kinds of useful things produced by labour, those things surely, which are living beings, and which grow and undergo changes before our eyes, must be more productive of enjoyment than such as are mere brute matters, the kind of labour and other circumstances being the same. Hence, a man who plants a hedge or sows a grass plot in his garden, lays a more certain foundation for enjoyment than he who builds a wall, or lays down a gravel walk; and hence the enjoyment of a citizen whose recreation, at his suburban residence, consists in working in his garden, must be higher in the scale than that of him who amuses himself in the plot round his house, with shooting at a mark or playing at bowls.

"One of the greatest of all the sources of enjoyment resulting from the possession of a garden, is the endless variety it produces, either by the perpetual progress of vegetation, which is going forward in it to maturity, dormancy or decay, or by the almost innumerable kinds of plants which may be raised in even the smallest garden. Even the same trees, grown in the same garden, are undergoing perpetual changes throughout the year; and trees change, also, in every succeeding year, relatively to that which is past, because they become larger and larger as they advance in age, and acquire more of their characteristic and mature forms. The number of plants, and especially of trees, which can be cultivated in a suburban garden at one time, is necessarily circumscribed; but if a suburban amateur chose to limit the period, during which he cultivated each tree or plant, to the time of its flowering with him for the first time, he might in the course of a few years, more or less in number according to the size of his garden, have had growing in it all the plants in cultivation in the open air in Britain, with the exception of a few of the larger of the forest trees; and even these he might also have flowered by making use of plants raised from cuttings

or layers, or of miniature trees made by ringing and rooting the branches of old trees in the Chinese manner. (Such come early to maturity.)

"Independently, however, of the variety and change resulting from the plants cultivated, every month throughout the year has its particular operations and its products; nay, it would not be too much to say that during six months of the year, a change takes place, and is perceptible in the plants of a garden, every day; and every day has, in consequence, its operations and its products. Even in winter there is still something to do in a garden, however small may be its extent; the walks require to be kept in order, and some plants must be protected by litter or matting. These are a few of the absolute enjoyments to be derived from a suburban house and garden; and we shall next notice another which flows from the same source, but which may be called relative or incidental. The opportunity which a garden affords to its possessor of acquiring a scientific and practical knowledge of plants is a source of great interest, not only in his own garden, but wherever else plants may come in his way, whether in a wild state, in gardens, exposed for sale in the markets, or delineated and described in books. Another source of incidental enjoyment is that which will arise from the acquirement of some knowledge of gardening, and of rural architecture, as an art of design and taste."

The Pennsylvania Horticultural Society has done much in our own vicinity towards forming a capacity for the enjoyment of natural beauty, and to infuse into all classes of our citizens, a just appreciation of one source of pleasure within their reach; a pleasure which, unlike many others, costs so little as to be, in some form, within the means of all, and whilst it does not impair the purse, improves the health, cheers the mind, and, by making home agreeable unites the family circle.

There are few surer indexes to the character of the inmates of a dwelling, than the presence of plants, and a few simple flowers modestly placed upon the window ledge, that whilst they derive benefit from the light and air, all may participate in the pleasure they impart, bear evidence, in some degree, of the contentment, not to say refinement, which exists within. Those who can only

derive enjoyment from excitement, and the glare of wealth, may smile at this conceit, but to us it is as sure an evidence of a refined mind, as the exquisite texture of the hangings, or the mirror-like purity of the glass.

It is gratifying to be able to say that Philadelphia leads in horticultural taste; none can witness the display of rare and beautiful garden products, at the monthly and annual exhibitions of the P. H. Society, and the thousands of delighted visiters, without conviction that, though much remains to be done, much, very much, has been accomplished; whether this perception of floral beauty, which exists among us, has been formed in a measure by the facility with which it may be gratified, or that that capacity has created the ample means for its enjoyment, admits of question; perhaps they have mutually reacted; certain however it is that the well-kept private gardens, and choice collection of plants, in and around the city, are very numerous, and on the increase.

Philadelphia, may emphatically be termed the PLANT MART of the UNION, for within the bounds of the county are accumulated, there can be no doubt, a greater number and variety of plants, for sale, than can be found in any other spot in America; and it is the source from which much of the distant demand is supplied. Two of the oldest Nursery establishments in the Union, BARTRAM'S BOTANIC GARDEN and the LANDRETH NURSERIES, exist in its vicinity, and a multitude of young and thriving establishments, mainly devoted to the culture of exotics, have been formed within the last ten or fifteen years.

If this little work, unpretending as it is, shall have the effect to extend a taste for horticulture, or induce reflection on the pleasure its pursuit may give, a leading object in its republication in this country, will have been accomplished.

Philadelphia, March, 1844.

ADVERTISEMENT

TO

THE ENGLISH EDITION.

THE cultivation of the Flower Garden is frequently not only an expensive but a disappointing pursuit, from the possessor of a garden not knowing any thing of the nature or habits of the flowers he wishes to rear. In this little work, all the information necessary for the rearing any flower that will come to perfection in the open ground, in this country, is plainly and concisely given.

The mode of treatment of plants in pots, those pets of the parlour-window, is particularly attended to; and those flowers which are best fitted for this mode of cultivation are pointed out, and the method of preserving them through the winter, and of increasing or rearing them, is detailed in a manner so plain, that an unprofessional person need not fear of success.

Plants requiring much or little water, much or little light, are distinguished; what kind, if any, protection is called for in winter; and when, or how, seeds are to be sown, or other means of propagation be resorted to, is familiarly detailed. Thus forming, on the whole, a work that will enable any one possessing a Flower Garden, successfully to become his own Gardener.

CONTENTS.

CHAPTER I.

Introductory Observations 13
Laying out the Garden 13
Gravel Walks and Edgings 14
On Planting 15
On Transplanting Trees and Shrubs 16
Growth of Plants 17
Manure 18
Bulbs in Water-glasses 19

CHAPTER II.

The Conservatory 20
The Green-house 21
The Cold Pit 21
The Plant Verandah 22

CHAPTER III.

Hardy Ornamental Shrubs 43

CHAPTER IV.

Hardy Deciduous Trees 59

CHAPTER V.

Hardy Evergreen Trees 68

CHAPTER VI.

Hardy Vines and Creepers 73

CHAPTER VII.

Herbaceous Bulbous and Tuberous-rooted Flowers .. 76

CHAPTER VIII.

Annual, Biennial and Perennial Flowers 96

THE

MANUAL OF GARDENING.

CHAPTER I.

A LOVE of flowers is one of the earliest of our tastes, and certainly one of the most innocent. The cultivation of flowers, while it forms an elegant amusement, is a most healthy and invigorating pursuit. Unlike hunting, fishing, shooting, or similar rural amusements, it inflicts no suffering on any of the animal creation, and merely aids nature in her efforts to make the world beautiful to the eye, as the fruits are pleasant to the taste. The flower garden, while it agreeably occupies the time, does not impose a heavy tax upon the pocket; and there are very few flowers but what may be cultivated to as great perfection in the garden of the peasant, as of the peer. It is a taste, too, which is well adapted to the female character, and affords much rational amusement to the recluse, who by choice or chance is separated "from the crowded haunts of men, in busy cities pent." The pleasure of the cultivator of flowers is not confined to the gratification of beholding the expanded flower, when it spreads forth its glories to the meridian sun; every stage of its growth has been a source of delight, from the moment the seedling but peeped above the ground, to the period of its perfect development; and a flower which has been reared by one's own hand, is viewed with tenfold delight, compared to one, the growth of which has not been witnessed or provided for.

LAYING OUT THE GARDEN.—A garden is an artificial appendage to an artificial object. A flower is not a production of unaided nature, nor can a garden ever be supposed to have sprung up spontaneously: therefore all that has been said against straight walks and square beds, can only prove that a garden may be too precisely laid out, and never demonstrate that it should assume the appearance of a wood, or a wilderness. Circles, squares, ovals and angles, are all pleasing figures, and are all strictly appropriate to the flower garden, which is a spot where art and taste unite to display to advantage the charms of nature.

The art of gardening, indeed, like painting, or any of the fine arts, requires that the imitation of nature should not be too close; for a flower gardener, who should imitate nature so exactly as to allow the grass and weeds to spring up, in all their pristine luxuriance, among his choice flowers, would not produce a beautiful result, but would disgust by his slovenliness, while he meant to charm by his inartificiality. Mr. Wyndham, when speaking of flower gardens, observes, very justly, that "places are not to be laid out with a view to their appearance in a picture, but to their use, and the enjoyment of them in real life; and their conformity to these purposes is what constitutes their true beauty. With this view, gravel walks, neatly-mown lawns, and, in some situations, straight alleys, fountains, terraces, and, for aught I know, parterres and cut hedges, are in perfect good taste."

After all, the mode or manner of laying out a garden must always remain a matter of individual taste: which taste will generally be more or less modified by the prevailing fashion of the day, and the circumstances connected with the situation in which the garden may be placed.

GRAVEL WALKS, and EDGINGS, are the best, and indeed only, proper divisions of the flower garden.

Box is perhaps dear at first, but it is eventually the cheapest as well as the best border you can have, being undoubtedly the prettiest thing for the purpose. It may be kept to any width or height; it has great durability, and thrives in all sorts of soils, though much the best in dry, and under all aspects. This plant is of very easy propagation.

The planting Box requires some care; the edging of Box ought to be put in immediately after the gravel walks are formed. These walks, to be kept in good order, should be broken up once a year, about the middle of May: they must be broken up with a pickaxe, raked, and carefully rolled, and then little or no grass will shoot; what does, must be immediately removed. The comfort of dry walks will greatly, and in heavy land altogether, depend on the foundation on which the gravel rests. Unless they are so graded as to discharge the water beyond the garden bounds, and filled in, previously to putting on the gravel, with twelve inches, more or less, of brick-rubbish, broken stones, or similar substances, it will be vain to expect dry, comfortable walks. If well-constructed, they may be used immediately after a shower, when the garden is to many persons the most attractive. Where gravel cannot readily be procured, tanners' bark, laid on a substantial foundation, makes a soft and agreeable walk, easily kept clean, as weeds do not grow in it. It cannot be necessary to enter into detailed directions for the construction of a garden walk, as the judgment of most persons is amply sufficient, without experience, to adopt the proper course. Where

the work is to be done on a large scale, as in the construction of new gardens, laying out roads through pleasure grounds, &c., the proprietor will usually find it his interest to submit the direction to a practical gardener; or, if he choose to superintend the work, from partiality for such occupations, will avail himself of the aid of those competent to advise.

BUXUS SEMPERVIRENS, the common dwarf Box, is the variety used for edging walks, and is certainly better adapted to that purpose than any other plant. When the gravel walk is made, the mould must be carefully dug away close to the gravel—leave no mould between the Box and the gravel; a trench must then be made nearly a foot deep, the roots of the Box must be parted, and the redundant part cut off; the Box is now to be placed evenly against the gravel—a line must be used; a thin edging only is requisite, as Box increases very fast. The mould must now be trodden down close to the Box, and the top clipped all to one height. If the weather be dry, it must be carefully watered. The edging should stand about four inches high; the earth in the border or beds must be kept back from smothering it during the first year. The best time to plant Box is April, or mid-summer, choosing showery weather—if not sufficient moisture from the clouds, water freely. It may be clipped early in the spring, and be replanted when it has become overgrown, or an increased supply is required for edging.

THRIFT, if neatly planted, makes pretty edgings to borders or flower beds, both as an evergreen and flowering plant, particularly the scarlet, which makes a beautiful appearance in summer. It should be planted in the early spring months, and kept watered. It increases very fast, is cheaper than Box, and very hardy.

The edgings of Thrift should be trimmed a little in July or August, when it is out of flower, cutting off all the flower heads; where the sides have grown uneven, let them be cut into order, either with the shears, or, if too much overgrown, with a short edging-iron.

Where utility is the principal consideration, the edgings may be of strawberry vines, carefully restrained, and renewed every two or three years, thus yielding fruit large and of fine quality; also of thyme, sweet herbs, &c.

ON PLANTING.—When the garden is laid out according to the taste of its proprietor, the next thing to be attended to is the planting. In doing this, either in beds or borders, it is necessary carefully to attend to the height and colour of each particular plant, as much of their beauty will be lost, except care is taken to heighten their effect by contrast. The smaller plants should be disposed in clusters near the edge of the bed or border, and

those of increasing size placed behind, in succession, till the tall ones reach the centre of the bed, or the back of the border. In narrow borders, which will not admit of more than one or two rows of plants, either singly or in groups, plants of different heights may be grown alternately, taking care that they do not overshadow or hide the smaller ones. Great care must be had, in selecting plants, to secure a succession of flowers. In small gardens, particularly, it is necessary to attend carefully to the variety of colours, heights of plants, and their time of blowing; or, when the plants come to maturity, they will produce anything rather than a pleasing effect: but with due attention, there is little or no difficulty in keeping a constant supply—so that, for the greater part of the year, something pretty or showy may be found. In our description of shrubs and flowers, the height, colour and time of blowing are noted, in order that attention may be paid to these particulars.

ON TRANSPLANTING TREES AND SHRUBS.—Success in transplanting depends in a great degree on the skill and care with which that operation is performed; for, unless it be done in a workman-like manner, it had better be left undone, as in that case we should escape the pain and regret of seeing our labour yield the fruit of disappointment. In many, very many, cases, where trees and plants die on being transplanted, it is probable, if we could, Asmodeus like, pry into all the circumstances which attended the removal, we should find that the plainest dictates of reason, to say nothing of the well attested facts which horticultural experience has developed, as governing rules, had been violated, and, that either the plant had been unduly shorn of its roots in removal, that it had been cribbed and confined in a hole better fitted for a post, than "a thing of life;" or, that its former habit had been opposed by placing it, perhaps, many inches deeper in the ground than it had formerly stood. Success in horticulture must mainly depend on studying the operations of nature, by striving to aid her efforts, but in no case going counter to them; for though she may at times and for a limited period suffer opposition to her laws, she will ultimately exhibit her displeasure.

On removing trees from the nursery or elsewhere, let it be done so as to preserve as many roots as possible; any which may have been mutilated, and the long and straggling ones, should be pruned, taking care at the same time to screen them from the sun and drying winds, whilst the preparations for planting are in progress. If they have been received from a distance, immediately on their arrival, the bundles or boxes, as the case may be, should be unpacked, the roots well watered and "laid in," as it is technically termed, that is, placing them in an angular

position, and covering the roots with earth until the ground in which they are to be permanently planted, is ready to receive them. The hole in which it is intended to plant an ordinary sized tree from a nursery, should be full three feet in diameter, and nearly the same in depth (for shrubs or quite small trees, so much space will not, of course, be requisite). The earth from the bottom should be cast aside, and the hole filled up again with compost or rich garden mould, a little old stable manure, but none that may ferment, may be used in the compost, or mixed with the garden mould. The tree should be planted one or two inches deeper than it previously stood, the roots and fibres being spread out horizontally or fan-like, and during the process of filling in the earth, shake the tree several different times, so as to admit the soil between the fine roots, and fill up cavities which might otherwise remain, also gently tramp the soil as the hole is being closed, and add a little water when the excavation is filled; finish by forming a basin around the trunk twelve or eighteen inches in diameter, to receive the rain, or water which it may be necessary to give from time to time, should the ensuing warm season prove dry. A thick coat of long manure, grass, or litter of any kind, placed immediately over the roots to screen them from the sun, and prevent rapid evaporation, is more beneficial than artificial watering. To prevent the winds from rocking the tree, and thus breaking the fibres, it should be secured to a stake by bands of straw.

The season for transplanting trees in the latitude of Philadelphia, is from the middle of October to the first or middle of May, as vegetation may be early or late; as a general rule suited to all latitudes, transplanting may safely be done when the sap is not in motion, and no impediment exists by reason of the earth being too wet or frosty. *Evergreens*, however, are thought to succeed better when planted in the spring; much nevertheless depends upon the nature of the soil; and, if heavy, the spring is generally preferable, as the frost acts with greater force on wet land, and sometimes *draws* the newly planted trees.

GROWTH OF PLANTS.—Plants absorb their nutriment by the roots, this nutriment is then conveyed through the stem into the leaves; there it is subjected to a process by which a large proportion of water is discharged, the rest is submitted to the action of the atmosphere, and carbonic acid is first generated and then decomposed by the action of light; carbon is now fixed under the form of a nutritive material, which is conveyed back into the system of the plant, for the developement of all parts of the structure; and a proportion of the secreted matter is afterwards ejected from the plant. It was Mrs. Marcet, in her Conversations on Vegetable Physiology, who first drew the attention

of practical gardeners to the fact of plants making an excrementitious discharge from their roots into the soil; thus opening a field of speculation that leads to important facts, as connected with the management of plants. This excrementitious matter does not appear to injure plants of other species, to any considerable degree; but it soon renders the soil unfit for the culture of plants of the same species, which will considerably deteriorate if cultivated for above three or four years on the same spot. The Rose-tree offers a remarkable instance of this: it shoots out its suckers to a considerable distance, trying as it were to escape the already saturated earth, and draw its nutriment from an uncontaminated source. The same may be observed in many plants that ripen seeds and shoot out suckers; thus plainly indicating that they require a fresh supply of uncontaminated nutriment, which should be afforded them either by transplanting at the proper time, or digging away the earth as much as possible without injuring the roots, and giving a fresh supply of earth. It is therefore particularly advisable that soil, designed for the reception of flowers, year after year should be sweetened or turned up to the influence of the frost and air: this is advantageous in all kinds of garden culture, but is more particularly attended to by florists, who repeatedly turn all their soils and composts, exposing them as much as possible to the action of the air and sun. This points out also the advantage of shifting the situation of the flower beds annually: thus, where Tulips blew one year, Carnations, or some other sort of flowers should be grown the next—by no means keeping the same spot or bed, year after year, for the same sort of plants.

MANURE.—Flowers require the utmost care, not only to change the soil, but to refresh it with proper manure. The best kind of manure is usually the well-rotted dung of the horse, or other animal manure; this should be well fermented and rotted: liquid manure, obtained by soaking the dung in water, may be advantageously applied; but it must not be used too strong, or it will injure rather than invigorate. Bone-dust, which may be obtained at the button-factories, has been extensively used in England and in this country in agriculture. It would no doubt answer well for many plants. It is lasting in its effects, but care must be observed to use it gradually and in limited quantities. Poudrette is a powerful stimulant, without offensive odour, and a sufficient supply for a small garden may be always kept on hand unseen. Wood-ashes is also a strong and active fertilizer; and Guiana, the excrement of a particular sea-fowl in South America (on the coast of Guiana,) is said to produce astonishing effects. It is found in vast masses, probably the accummulation of ages, and has become an article of export to Europe for agri-

cultural purposes; we are not aware that any satisfactory experiments have been made with it in this country, but its qualities are about to be fully tested. A great object in the rearing of flowers should be not to overload them with rich or watery food, or they will abound in leaves while the number of flowers will be scanty. They must have plenty of light and sun till half-blown, after which they should be shaded to preserve their colours. Plants differ as much in their nature as animals, and therefore no rule can be laid down indiscriminately: some flowering plants require a highly nutritive soil, others again succeed best in a meagre one; we shall point out the proper soil for each when speaking of the individuals. Many plants flourish best in a dry or sandy soil, while to others a damp, adhesive, or retentive soil is equally beneficial. There are some few flowers which delight in a shaded situation; but the great majority only produce a great abundance of fine flowers when fully exposed to the sun's rays. Many flower-roots require protection during severe frosts, others will endure the utmost rigour of the winter with impunity; no general rule therefore can be given; but the nature and wants of each class will be pointed out under their general heads.

For more general information concerning manure, the site most advantageous for a garden, soils, &c., see what is said in our *Kitchen Garden*, where these topics are fully gone into. In the present work, the method of managing plants in pots is particularly attended to, pointing out which sorts are best adapted for that kind of culture. Pots form the whole flower garden of many individuals, and a very pretty show and succession may be produced, with common attention. It is now usual to buy each plant when at its perfection, and then permit it to die; but by attending to the rules laid down in the succeeding pages, many plants may be reared, at a much less expense, and kept from year to year; and as plants often become favourites, this is not only less expensive but more pleasing.

BULBS IN WATER GLASSES.—The kinds of Bulbs best adapted for water-glasses, are all the species of the Narcissus, the Hyacinth, the early dwarf Tulip, the Jonquil, both large Dutch and common Iris, both the Persian and the Dwarf Scotch Crocuses, and in short any of the similar sorts. You must commence by procuring glasses of the proper sort, of which there are many forms, but the one in general use is the least expensive, and perhaps the best; certainly it is the most convenient. Those with dark glasses are most congenial to the roots, but the transparent glass exhibits the progress of growth, which is no small portion of the pleasure of the culture; and at any time between October and January (after which the bulbs, if kept out of the

ground, shrivel and lose vigour; if it be desired to have them later, the better plan is to keep a supply in earth as a reserve) fill them with water and place your plants; the water must be soft, and just reach through the neck to the upper chamber, so that the bottom of the Bulb may be a little immersed in the water, not covered; then place the glasses in a warm room where they may at once enjoy light and heat: it is better they should be exposed to the sun's rays than not. By placing them in the glasses at proper intervals of time, a succession of flowers may be obtained from January to April, forming a pretty ornament for the parlour-window or chimney-piece; they require no further care, than to see that the water does not sink so low as to leave the roots dry: fresh water must be given at intervals of two or three days, to be judged of by the appearance of the fluid, whether clear or foul; when the bulbs are newly planted, the change need not be so frequent as after the glasses are filled with water. It is essential that the temperature of the water to be given, should be the same as that which it is to replace. The operation of changing is easily done by one person, when the roots are only an inch or two long, but after the flower stems are of some length, and the roots nearly fill the glasses, two persons become requisite, one to take out the bulb, and hold it, and to dip its roots in clear water to rinse them, and another to wash the glass, and refill it with water.

CHAPTER II.

THE CONSERVATORY, GREEN-HOUSE, COLD-PIT, VERANDAH, &c.—The Conservatory is designed for the reception of the most rare and beautiful exotics, which are here planted in the ground, instead of being placed in pots as in a green-house, or hot-house. The conservatory should either be attached to, or at least never be separated from the dwelling-house; and from its size, admits of more architectural display than other horticultural erections. The principle on which conservatories are constructed, is to admit as great a quantity of light as possible, and to obtain a facility of heating and ventilating every part. The modes of heating these, and hot-houses, are as various as the judgment or fancies of their possessors; but the last and apparently the most favourite method is by pipes of hot water.

Conservatories are principally designed for the reception of the larger sorts of green-house plants, but stove plants, particularly the fine flowering, or rarely fruiting kinds, may be thus cultivated with the greatest success; for though many plants

may be brought to flower in pots in a hot-house, yet numbers, of the larger sorts particularly, never can thus arrive at any thing like perfection of size. Due attention must be paid at all times to regulate the temperature, and in the winter months to keep off frosts: ventilation must also be attended to, so as to exclude damp; the plants must be duly watered with milk-warm water, keeping them free from decayed leaves or flowers. A supply of flowering bulbs and other plants must be kept up so as to secure a succession. Climbing plants trained in festoons add greatly to the beauty of the place during the summer months.

The GREEN-HOUSE is similar in its use to the conservatory, but it is on a smaller scale, the plants being kept in boxes, or pots of various sizes. The old method was to construct a shed-like building with a roof sloping towards the south, or south-east, but spaif roofs ranging north and south, are now considered more suitable for the purpose of growing handsome plants, than the old form.

Thus far we have reprinted from the London edition, the remarks on houses, and management of plants; but the difference in our climate, and other considerations, have induced the rejection of the remainder of that article, and the substitution of original observations.

Many other plans have been suggested for constructing this delightful appendage to both country and city residences. Experience has shown that a portion, at least, of the expense hitherto incurred in their erection is not actually necessary, and that a simple building, properly constructed, and sufficiently extensive for private gratification, may now be erected at a very moderate cost; and so simplified has the form become by successive modifications, that no difficulty exists in finding builders competent to execute the work. We could readily append plans, and lay down directions for the instruction of the builder; but it must be evident, that however elaborate they might be, they would be of little value compared with the inspection of such structures, in company with an intelligent carpenter. The better plan, therefore, for those who may design putting up a green-house, is to examine such as may be within their reach, and select as a model, some one which has proved well adapted to the purpose. It will be very easy to vary the size to suit the position in which it is intended to build, or the amount of expenditure contemplated.

In cases where it is not the wish of cultivators to incur the expense of an elevated structure, one of more humble pretension, but of successful application may be adopted; we allude to the Cold-pit, a sort of subterranean green-house, or frame, partially under ground, to screen it from the cold, and covered by glass, and provided with moveable outside shutters. The pit should be placed where it would be protected from northerly winds, and if

possible, with southerly exposure. If the soil be not naturally dry, there should be a drain laid, so as to carry off the moisture, which would otherwise accumulate, and prove prejudicial to the health of the plants, as well as render an entrance, by persons in delicate health, unpleasant, if not dangerous. In such a structure, well located, and managed with due care, most hardy green-house plants may be successfully preserved, without the aid of fire. But if the slight additional expense of a flue, were incurred, they could not only be preserved, but kept in a high degree of perfection, and with actually less care than in a green-house, because it would be less exposed to frost, than if elevated.

THE PLANT VERANDAH is another species of green-house, particularly adapted for cottage or villa residences. It consists of a covered projection having a glazed front, and the roof either wholly or partially the same. It may be placed against the front or one of the ends of the dwelling, according to the aspect, the principal windows opening into it in the French manner. But if this be not desirable on the score of expense, an arrangement equally successful, may be adopted, viz: the erection of an inside sash, receding two or three feet (more or less, as the size of the apartment, and the wants of the family may admit) into the room. In the space thus formed, between the outside and inside sashes, green-house plants, of any description, may be kept with great ease; much more so, than when simply placed upon the window-ledge; in the latter case the temperature of the room is frequently much too high, and fresh air so essential to their health, and consequent beauty, cannot be given without admitting a draft into the apartment. But by the plan proposed, warm air from the room, or cold air from the outside, may be given or withheld at pleasure, and without the slightest inconvenience. The gas, and dry scorching heat, emitted by anthracite coal, now so generally used in our cities, is destructive to vegetable life; hence the frequently unhealthy and cheerless aspect of plants kept in sitting-rooms where that fuel is used. By the plan recommended, that objection is obviated; as the heat may be properly adjusted, and its dry character corrected, by the gradual but constant evaporation of moisture which may be in progress; whilst all the pleasure which arises from having plants in the room, is as fully enjoyed as if the inside sash were absent.

Plants are frequently kept during winter in bath-houses, as now constructed in our principal cities; situated ten or twelve feet above the ground, so as to be reached from the second story of the kitchen-offices, or as is frequently the case, adjoining the ordinary family room, which is so placed as to overlook the garden. It is better the room should have a southerly, or easterly exposure; and if this appendage is so placed as to admit of a flue

for heated air, from the main furnace supplying the house (if it be so heated, now a very common occurrence,) by keeping a thermometer in the bath-house, and providing for the proper evaporation of moisture, which will correct the otherwise injurious effect of the heated air, plants may be kept in fine health, and without the necessity of an additional fire, the removal of a shutter, or any of the manual labour attending the green-house; and as in such a situation water is carried into the room by pipes, the whole management may be conducted by the ladies of the household, for whose special gratification (and the management of them is an essential part of the enjoyment derived from them) plants are usually kept. Birds in cages, goldfish in globes, may also be kept here, and if the room were sufficiently large to admit a rustic seat, it would be an agreeable lounge for an hour in pleasant weather, or a spot to which a visiter might be introduced with pleasant effect. We could scarcely recommend this arrangement when the proper apparatus for heating does not exist. If a stove, for instance, be relied on, constant care would be requisite, to keep the temperature uniform; and even then, the plants immediately surrounding the stove would be almost certain to be scorched and killed.

Many hardy green-house plants, and those of the most desirable kind too, may be kept without difficulty in a light airy cellar, where the soil is dry, and moisture consequently filters, or rapidly passes off. Here, without further attention than an occasional watering and admission of fresh air, for a few hours every day, when the weather is not severe, *Roses*, *Cape Jasmines*, *Oleanders*, *Lagerstræmias*, *Myrtles*, *Azalias*, the *Citrus tribe*, with many other plants which contribute so greatly to the summer ornament of the garden, may be kept with success; certainly not so well as in more favourable locations, but where nothing better is at command, the cellar may be useful as an aid to our summer enjoyment; indeed it would be an easy matter in the construction of a dwelling, so to arrange a portion of the cellar with open area, and capacious windows, as to admirably adapt it to the keeping of hardy green-house plants (including *Camellias*,) without fire heat; and in city residences, where space is an object, and the garden must be curtailed by any out-house structure, it would be a desirable arrangement; and one which would cost but a trifle, if it were a part of the plan when the house was being constructed.

Supposing the means for protection to be in readiness, we will proceed to make some general remarks as to the management of such plants as require protection.

About the 1st of October, or some seasons a week earlier, it will be prudent to prepare the plants for their winter quarters.—Those which have not been repotted during the summer, and may appear to require an extension of room, (of which the culti-

vator must in the main judge for himself, as it is impracticable to give the minute directions necessary to meet all cases) or fresh soil, should now be shifted; and such as do not seem to need such change, may have their appearance improved by the removal of an inch of the soil from the surface, and replacing it with fresh earth; which will rid it, for a time at least, of the moss which is apt to accumulate there. The pots should be scoured, which will likewise kill the green moss, or mould, which grows on the exterior surface; and the leaves should be carefully spunged, or vigorously syringed, to clear them of dust.

The arrangement of plants in a green-house is as various as the tastes of people; the usual mode is to place the small ones in front and those of greater size behind, so as to produce the effect of an inclined plane; and this mode is the best, for the simple reason that it gives all a share of the light, and also brings the smaller plants more into view. United with the foregoing arrangement some are studious to mix all the different kinds as fully as possible, so that no two of a species, or of similar appearance, may come together, to produce variety; this method has been severely criticised—"variety requires a certain degree of distinctness of character or feature, on which the eye can repose itself before proceeding to another; but where every thing is indistinctly mixed together, there can be no features, nothing on which the eye can dwell with satisfaction, all is confounded and reduced to a mere chaos of forms and colours." Others recommend, that "each genus and species be kept by itself, or where a number bear a striking natural resemblance, as for instance *Pelargoniums*, *Roses*, *Camellia*, &c., the whole be grouped together, not in a formal manner, but so as to show a sort of relationship, or connexion. By keeping plants together, it is not meant to keep them in contact, in a compact clump, but to place them in visible connexion, in irregular groups, which is quite consistent with placing the tallest plants of the group on the upper part of the stage, and the lesser plants nearer the spectator. It is sufficient that the connexion of the species be recognised by the eye, and that there appear in the green-house what there always is in natural scenery, something like a natural gradation, and blending of character in shrubs, trees, and herbs growing together." But after all it is vain to lay down arbitrary rules where so much depends on circumstances; as, for instance, the extent of the collection, the size of the plants, their adaptation to grouping, and a variety of other things, which must all be considered by the operator.

Having arranged the plants to suit the taste, be careful to give them fresh air in abundance, more especially for the first few weeks, and during the warm days, which usually occur at this season. They will also require water in greater quantity than

after the weather becomes cooler, and of consequence the evaporation less rapid; those which are in an active state, will require more than those which are dormant; but it may be observed that an accidental neglect to water, at this season, will not be attended with as injurious results, as if it were warm weather, or the plant were in free growth.

Many of the leaves which were green, when the plants were first housed, will gradually decay, and should be removed, and those plants, which may have been placed in the house, for instance, Crysanthemum, and some other herbaceous plants, to give an autumnal gaiety, may be removed from view, being no longer sightly.

As the weather becomes cooler, and winter weather approaches it may be necessary to be more cautious as to the admittance of air, and ultimately a little fire at night may be required; but if the house be provided with close shutters, fire will hardly be necessary until late in December; and not then if the season be mild. Let it be observed as a general rule, that the less artificial heat used, the better; provided the temperature can be kept to a proper height. If plants are forced much, they are liable to greater injury from extraordinarily severe weather, or any of those accidents which will sometimes occur in the "best regulated" houses. The shutters should be removed every day when it is practicable; for, though there may be no sunshine, the light is essential.

Presuming the severity of the weather to have passed by without the plants having been affected by the cold, and the spring to be approaching, and with it a warmer sun, and mild balmy air, it will be necessary to give air more freely, than of late; and to attend more systematically to watering the plants, especially such as may be coming into bloom, or shooting freely, as a neglect to water may greatly impair their beauty, and shorten the season of bloom. Of course these remarks are only intended for those who keep a few plants for personal amusement, and bestow a passing hour on their culture; not where regular collections are maintained under the charge of a well instructed gardener. Such a person, to be fitted for his post, should practically understand all these things, and though he will, if he have any ambition to excel, look into books, indeed, read all that may be said on the practice and theory of his profession, still these simple details should be as familiar to him as his own right hand. But to proceed. The temperature should not, at this early period of the spring, be suffered to reach higher than 50 to 55 degrees, as any sudden change in the weather, and such changes may be expected, would be severely felt by plants which had been unduly forced.

That pride of the green-house at this season, the *Camellia*

Japonica, will probably be in full bloom, and the expanded flowers may be preserved in beauty, by shielding them from the direct rays of the sun; indeed, the same may be said of all flowers; and in order to secure their bloom for the greatest length of time, and screen the foliage from the full force of the sun, acting through the glass, it is usual to give a thin coat of whiting on the under surface of the glass. A mode still better would be to provide the sash with curtains of cheap muslin, arranged on rollers, so as to be let down or drawn up at pleasure.

The warm weather may now bring into action numerous insects, which have lain dormant during the winter, or hatch eggs, which were deposited on the plants during the preceding summer. Most of these may be destroyed by fumigating the house with tobacco smoke; or, what is safer under certain circumstances, by syringing such as may be affected with a solution of tobacco, or very weak whale-oil soap; which may be rinsed off with clean water, after a few hours have elapsed. For the red spider, see observations, article *Camellia Japonica*. Another insect, popularly termed the scale, (*coccus*,) will frequently show itself in formidable numbers, especially on the stems and under surface of *Orange* and *Lemon* trees, the *Acacia*, *Oleander*, and other evergreen plants. The best method to exterminate them is to take leaf by leaf, and rub on a strong decoction of warm tobacco juice, or a solution of whale-oil soap, judiciously applied; this latter article is powerful in its effects, and we would advise the operator to make some experiments on a small scale, to test the strength with which it may be safely applied, before using it generally. This is the season when many plants, especially those with evergreen or persistent leaves, may be shifted, though most of them may be done equally well at mid-summer. *Geraniums*, and plants generally which have soft wood, as well as *Roses*, shift better when in a more inactive state, say late in autumn; but it may be done at any time, by using necessary caution.—Of course, when a plant is in full growth, and it be deemed advisable to remove it to a larger vessel, no person would be so destitute of reflection as to probe the roots severely, or remove any considerable portion of the old soil, thereby disturbing the tender fibres.

It has not been deemed necessary to append to each and every plant described, a minute description of the soil best adapted to it; and here we would take occasion to remark, there is a great degree of arbitrariness connected with the *modus operandi* in this branch of Floriculture. To observe the precise details laid down by some for the critical compounding of soils, is not less amusing than the prescriptions of many of our young practitioners in medicine—a more simple combination would answer equally well; but then there would be less display of wisdom. Presum-

ing that our readers have had some little experience in the culture of plants, or at any rate have a taste therefor, which will insensibly lead them to reflect on the nature and habits of vegetables, (and knowledge thus gained is the most to be relied on,) we proceed to make the following general observations on soils:

The *Acacia*, *Melaleuca*, *Metrosideros*, *Banksia*, and the great body of New Holland plants, thrive in a compost formed of almost equal portions of light loam and savannah.

The *Amaryllis*, or *Lily* tribe in general, *Agapanthus*, *Oleander*, *Pelargonium* or Geranium, *Gardenia* or Cape Jasmine, and *Citrus* or Orange tribe, in 3 parts loam, 1 decomposed leaf, 1 sand, 1 manure. The Citrus may have rather more manure; or, what is perhaps better, the surface of the earth may be covered with it, or an occasional watering of fluid manure may be given.

Camellia, *Thea*, *Fuchsia*, *Passiflora*, *Tecoma*, *Myrtus*, *Bignonia*—light loam and decayed leaf, in about equal proportions, and a small quantity of sand.

Epacris, *Erica*, *Kennedia*, *Azalia*, *Rhododendron* — three-fourths savannah, one-fourth light loam.

Loam formed by the decay of soil from an old pasture of naturally light land, is the best, and, where plants are kept, a supply of it should always be in readiness. It will usually require a twelvemonth to prepare it by the decay of the roots, and by frequent turning and exposure to the atmosphere, to give the seeds which would otherwise lie dormant, an opportunity to sprout.

Savannah, or peat, as it is indifferently termed by gardeners, is in its natural state a dark earth, found in certain localities, which may have been at some former day submerged. Its constituents are loam, sand, and decomposed vegetable matter, principally the latter. It may be artificially compounded by a mixture of surface woodland-earth and fresh sand; the white sand, such as is used by glass-blowers, is a good kind. It is, however, unnecessary to form this compost, as, in all cases where the natural savannah is not attainable, a larger proportion of woodland-earth and sand may be used, than is recommended above.

Woodland-earth, or leaf mould, may be obtained from the forest, or its equivalent may be formed by an accumulation of leaves, placed where they may decompose; that from the woods is, however, better, as the fibrous matter, collected with it tends to keep the particles distinct, and aids the growth of the roots. Many cultivators carefully sieve the earth with which they pot, to remove all fibrous matter; but that is an error: only the large lumps and coarse extraneous matter should be rejected, as the other keeps the whole from cementing, and gives the small fibres a chance to search for food, and also acts as a filter for the water.

The manure generally used in plant culture is stable dung, thoroughly decomposed by age, so that when a spade is passed through it, it will cut clearly, and when partially dried, may be rubbed into minute particles; there are frequently vast quantities of grass and weed seeds, incorporated with such manure, which may prove troublesome if a chance be not given them to vegetate by frequently turning the mass, and exposing it to the atmosphere.

ACACIA.—The *Acacia*, or *Mimosa*, as they are indifferently termed by amateurs, embrace a great many species, whose habit is to bloom during winter and spring; a considerable number of them are very pretty, producing yellow flowers, varying in shade or tint. The following are beautiful kinds: *verticillata, pulchella, florabunda, linearis, diffusa, armata;* some of these have the flowers in globular heads, others in cylindrical spikes. The *A. Julibrissin* is a fine showy species, growing as large as a full-sized apple tree, and withstands the winter in the south. We have seen them in gardens in *Alabama* and *Mississippi*, 20 to 30 feet high. It affords a dense shade on a bright day, but when it threatens rain, the leaflets close their lower surfaces, till the sun again appears.

AGAPANTHUS UMBELLATUS is a showy plant, producing umbels of sky-blue flowers. The scape in vigorous plants ascends two feet or upwards, and when several bulbs are united in a group, the effect of their combined umbels of cerulean blue, is charming. It thrives best in strong, rich, garden mould, and should be kept in pots of ample size; figured in the Floral Magazine.

AMARYLLIS.—A genus of bulbous-rooted plants, many of which yield pretty, and some magnificent flowers; among the latter are several hybrids, produced by crossing the original species. *A. Johnsoni, A. regina, A. aulica, A. vitata* and *A. purpurea*, (at this time called Valatta purpurea) the last figured in the Floral Magazine, are fine kinds. The *Amaryllis* is easily managed, if care be taken to give plenty of water whilst it is in free growth, reducing the quantity as it declines, and keep the bulbs in a dry state whilst they are dormant.

ASTER ARGOPHYLLIS, the *Musk Plant*, is desirable on account of the curious musky odour, imparted by the leaves when rubbed. Its flowers, or the general appearance of the plant, are by no means attractive, but it is, nevertheless, quite a favourite.

AUCUBA JAPONICA.—See page 45.

AZALEA.—There are now many varieties of this splendid plant; those from China are not sufficiently hardy to withstand the climate of the middle states, but are easily kept in an ordinary sitting room. Few plants are more attractive, and no col-

lection should be without a well selected variety. Those which are most esteemed are the *indica*, (the *old bright scarlet*,) *indica-purpurea*, *phœnicia*, *alba*, *smithii*, *gillinghami*, *sinensis*, *nova-blanca*, *&c.*

AURICULA.—This is one of those called Florist's flowers: it is a native of Switzerland. The soil most suitable for it, and most easily procured, is equal proportions of fresh garden-mould, and well rotted cow dung, to which add a little sand; a more complex kind is sometimes recommended, composed of one half of well-decayed dung, one fourth of turf loam, one eighth of peat or heath soil, and the rest rotten leaves and river sand, the whole having been exposed to the frost in the preceding winter. They may be propagated either by seeds or off-sets, the former method is seldom resorted to except by florists, who wish to procure new sorts. The seed should be sown in boxes in March, covered very lightly, and placed in an eastern aspect; they must be gently watered, and when the plants have five or six leaves, be planted out into other boxes, or pans, proceeding the same till they become strong; they should then be planted in the border till they flower, when the best can be selected for potting. Off-sets should be taken off when the flowers have faded, and planted separately in small pots filled with the soil last described, and the old plants should be also re-planted in fresh soil. Auriculas must either be protected during the winter in a frame, or placed under the shelter of a wall, the pots turned down on their sides, and a slanting board placed over them: the pots should be placed on coal ashes to prevent the worms from entering; this also prevents the bottom of the pot from becoming clogged up, which would hinder the circulation of the water. In spring, when the frost is over, well expose them to light and air, and remove the earth from the top of the pot, for the depth of an inch, supplying the place with fresh compost. Liquid manure may also be applied occasionally. If more than one flower-stem appear to each plant they should be removed, and not more than eight or ten flowers should be allowed to remain in each bunch, which will make the blossoms finer. Auriculas which remain in the open border, should be taken up and parted every three years, or they will deteriorate and soon die. Those kept in pots should have an inch and an half of broken potsherds or stones at the bottom of each pot to secure a good drainage: the soil must be of a medium quality, neither too clayey nor too sandy; and at the same time be rather rich, to supply abundant nourishment, and retain sufficient moisture to support the healthy vegetation of the plant.

This tribe is certainly a pleasing one, and in England its culture is pursued with astonishing avidity by many of the working

manufacturers—a class of floral amateurs unknown in the United States. It is doubtful whether the Auricula will support the winter in the latitude of Philadelphia, even in sheltered situations; and the safer plan will be to confine its culture to pots, which may be removed, on the approach of severe weather, to a place of safety.

BIGNONIA.—See page 73.

BEGONIA DISCOLOR serves to create a variety, the foliage being strangely coloured. The leaves are green on the surface when fully expanded, but when young, and always on the backs and along the veins, they are bright red; the flowers which appear in July, are pink with a yellow tuft in the centre; they hang in bunches very elegantly, and never fade, but drop off when at maturity: water should be gradually withdrawn after blossoming. The plant is easily kept in a dormant state throughout the winter; indeed, after its flowering it will fall to pieces down to the surface, when the pot should be placed in a dry spot and kept carefully from frost and mice; the latter are very fond of the tubers. In February it will come up, when it should be repotted in a rich loamy soil. It must now be well watered; it should daily have a good supply, not from a flat or saucer, but freely applied to the surface of the soil. After flowering, small bulbs appear on the joints of the plant, but not where the flowers appeared: they grow to the size of peas of a pear shape: these as they fall should be lightly covered with the soil; they will grow the next spring, and form the future tubers; they do not blossom the first year, but should be potted out two or three in a pot, and when they die off, set them by as you did the old ones; they will become the blooming plants of the next season.

BLETIA TANKERVILLI produces spikes of showy flowers; but to have it in high perfection, requires strong heat.

BRUNSVIGIA JOSEPHINA, a fine bulb, from the Cape of Good Hope, yields conspicuous rose-coloured flowers in umbels.

CACTUS.—This tribe is in variety almost innumerable. It has been sub-divided by botanists into several genera; many of them are desirable only as objects of curiosity; for of all the vegetable creation, they are certainly most strange. Those which are cultivated for the flowers, are principally ranged under the head of CEREUS; of which, *grandiflorus*, or night-blooming *speciosus*, *speciosissimus*, *akermanni*, *truncatus*, *jenkinsonia*, and *russellianus*, are the most showy. They all require strong heat to bloom in perfection, and rich light soil; if watered occasionally with liquid manure, it will promote their growth, and luxuriance of bloom.

Mr. Poinsett, during his mission to Mexico, procured and ship-

ped to the Bartram Botanic Garden, with praiseworthy liberality, a very splendid collection of Cacti; but unfortunately many of them fell into ill health, and it is feared are no longer to be found in the United States. The collection of Mr. J. B. Smith is now unquestionably the finest in this country; and great praise is due him for the indefatigable manner in which he has pursued their accumulation from every quarter, solely impelled by the love of science. He has, however, the additional gratification of seeing his exertions the source of pleasure to all who have the opportunity to inspect his houses.

CALCEOLARIA.—This plant is delicate, suffering greatly from the heat of summer, and seldom succeeds well, except in the hands of skilful cultivators. The new hybrid varieties are very showy, perhaps among the most so, of lately introduced plants.

CALLA.—This beautiful plant, though most commonly grown in pots, is sufficiently hardy, with a little protection from wet and frost, to stand the winter in our borders, where its large glossy leaves, and noble white flower, with its golden spadix in the centre, render it very interesting. It may be propagated by taking up the roots in August or September, and separating the offsets, planting them in small pots, with a rather sandy light soil. If the pots are taken within doors in winter, plenty of light and air must be given, but not much water, of which it cannot have too much during the heat of summer. They should have air every mild day, and be gradually hardened towards the middle of April to bear the open air, and in May can be plunged, or turned out into the border. The roots are thick and fleshy, as is the whole plant. When left in the border for the winter, empty pots may be turned over them in very wet weather, or during severe frosts. It is much safer, however, to remove them to the green-house, or cold pit, during winter, in which case they will come early into bloom.

CAMELLIA JAPONICA.—This truly beautiful tribe, which now extends to several hundred varieties, was named by Linnæus in honour of *Father Camelli*, a Jesuit, who introduced it into Europe in the year 1739. They are evergreen shrubs, growing not only in Japan, but in China, Cochin-China, and the East Indies, generally; and of all flowers, except the *Rose*, is probably most admired. The plant attains an elevation of forty to fifty feet in India, but appears of slower growth in Europe, and the United States; or else plants of that size are of great age; here it forms a shrub only, but of the most superb appearance, whose persistent foliage of a glossy green, and splendid flowers, place it without dispute in the first rank among the plants of our green-houses. The greater number of the varieties, have

reached us by the way of Europe; some of these having their origin in China; but the larger number being hybrids, or seedlings, produced in France and Britain. The climate of the United States appears favourable to the *Camellia*, and there have originated here several truly beautiful varieties; and from the zeal manifested by amateurs, and professional cultivators, others may be expected to follow. It is a plant of hardy habit, and will sustain a slight frost without serious injury; but it is liable to disease and ultimate death in a green-house, or sitting-room, where the temperature greatly varies; as is frequently the case in dwelling-rooms, where the heat is high by day, and low at night. Indeed there are few plants more susceptible to change, and the buds will from such transitions frequently become discoloured, and fall; thus disappointing the hopes of the expectant cultivator even when the plant itself has apparently sustained no injury. To render the inflorescence certain and perfect, the temperature should be even; varying as near as may be, within 45 to 55 degrees of Fahrenheit; a few degrees either way, if the variation be not too sudden, is of no importance. Fresh air is also indispensable, and may be admitted, if due care be observed, even when the out-door temperature is somewhat frosty. Spunging, or what is better, sprinkling the leaves with a plant syringe, is of great advantage, not only for appearance sake, but to remove the dust which would otherwise close the pores, and impede the healthy inspiration and respiration, which, doubtless, are constantly in action through the foliage.

The *Camellia* is liable to the attack of insects, of which, fortunately, none are formidable except that known by gardeners as the "red spider;" it is so minute as scarcely to be visible, taking up its abode on the under surface of the leaves, from which it is only to be dislodged by frequent syringing with soft water, and the utmost care in the management of the plant, to restore a healthy, vigorous action, the surest way to remove the intruder—for it only presumes to introduce itself on plants which are in impaired health. Its presence may be detected by those not acquainted with it, by observing the flaccid texture of the leaves, and by the minute punctures of a brownish hue on their lower surface. *Camellias* are repotted immediately after they have ceased to bloom, and before the leaf buds expand; a portion of the old earth should be carefully removed to loosen the fibres which may have wound themselves around the circumference of the ball, as well as to make room for a larger quantity of active soil, in the pot or vessel to which the plant is about to be transferred, and which should be somewhat larger than that from which it has just been removed; but in displacing the earth as above directed, the greatest caution is necessary, else the tender

fibres may be bruised, and disease ensue. Formerly, (and at the present day by some cultivators,) they were kept in small vessels, the roots cramped and confined, under a mistaken notion that much earth and "elbow room" were prejudicial; experience has proved the error, and the finest and most healthy plants are in collections where reasonable space is given. Before filling in the earth, the bottom of the pot should be covered to an inch or more in depth, with pieces of pots or very coarse gravel to act as a drain, it being of the first importance that water should never stagnate. Immediately after the plant has been repotted, it should be well watered and placed where it will not be exposed to a current of air.

The *Camellia* is fond of shade and moisture, but there is little doubt that the complaint made of difficulty in its management, arises from over anxiety, and, as one result, oft-repeated and excessive watering. A neglect to water is also attended with disaster, as it likes constant humidity, but to a moderate extent only, therefore, we repeat, it should never be surcharged with water. In winter the morning has been recommended as the more favourable time to water, and in summer the evening. During the warm months place them in rather a damp situation, where they will be shielded from the sun during the heat, and it may be the greater portion of the day; syringe them regularly, and at intervals of two or three days, which will greatly improve their appearance and promote health. The soil in which they thrive well, is a mixture or compost of light loam, (created by decomposed sod or turf,) fresh decayed leaves and fresh-water sand, about equal portions of loam and leaf mould, and a small quantum of sand are the preparations. The varieties are far too numerous to describe in a work of such limited extent as this, but we annex short descriptions of a few select kinds. In conclusion we may observe, that the Camellia has been pronounced "the most beautiful conquest" (in allusion to the varieties produced by art) "which horticulture has achieved during the last century. The magnificent form and appearance of the shrub, the rare elegance of its foliage, the beauty and size of the flowers, the season when they appear, their variety, their abundance, and their duration, are qualities which no other vegetable possesses in such an eminent degree." Philadelphia has ever been, since the introduction of this plant into America, its centre of attraction. Here, it is beyond question, larger numbers exist than may be found in any other spot, indeed we had nearly written in all other portions of the Union combined; independent of many superb private collections; the green-houses of Carr, Landreth & Fulton, Buist, Ritchie & Dick, McKenzie, Dryburg and others, contain many thousands in all stages of their growth, and happily, at prices

which place this universal favourite within the reach of every amateur.

C. *Alba plena.*—Flower very large, full, regular, deprived of stamins, which are replaced by numerous petals, thick, imbricated, milk white, forming a very round corolla, four inches in diameter, and of extremely elegant form.

C. *Candidissima*, a shrub of pretty appearance, vigorous, bud oval, quite large before bursting into bloom, scales light green, flower very large, four inches or more in diameter, full of pure white petals regularly imbricated, and resemble very much those of the white Camellia, numbering from seventy to seventy-five, broad, a little crenated at the summit and diminish in width in proportion as they approach towards the centre.

C. *fimbriata.*—Leaves exactly like those of the C. *alba*, but a less vigorous shrub; bud large, rounded; scales of a dark yellow; flower three and a half inches in diameter, full, depressed; petals gracefully imbricated, and dentated.

C. *amabile.*—This is a remarkably fine flower, regularly imbricated; the petals of a rose colour, shading to a pink, and deepening, towards the centre, to a red; handsome foliage, flower three and a half inches in diameter. Raised from seed by Mr. J. B. Smith of this city, one of the most successful cultivators of the Camellia.

C. *sassanqua rosea*, or multiflora.—This is usually considered a distinct species. Leaves small, oval, acuminate, of brownish-green; flowers small and full; petals curled, rose-colour—very similar to a small pompone rose. Very pretty.

C. *donkelari.*—Originally from China, and a beautiful variety; of a vivid red, variegated and spotted with white; three rows of petals, with the centre full of stamins; flower usually four inches in diameter.

C. *conchiflora.*—Of a clear red; petals frequently marked with white, and spirally arranged; leaves of a pale green, oval, little acute, reclined and numerous.

C. *Landrethii.*—This most beautiful variety was reared from seed, at the establishment of the Landreths, now conducted by D. Landreth & Fulton. It is of a clear rosy pink, fading slightly towards the centre; about four inches in diameter, very double, and finely imbricated; blooms freely; leaves acuminate, ovate; a plant of good habit, and much admired.

C. *decora.*—Leaves dark green, very glossy; flower of a clear red, double, four and a half inches in diameter; petals of the exterior in three rows, festooned, crenated at the summit; those in the interior, small, forming a large centre, containing some concealed stamins.

C. *incarnati*, or *Lady Hume's Blush*.—This is one of the most beautiful Camellias known. It is of a delicate blush, and of an apparent waxy texture; the petals are often arranged hexangularly, giving it an artificial aspect; the foliage easily distinguishable from double white; the plant not so compact in its growth.

C. *dorsetti*, or *Parthoniana*.—Leaves of a rich green; flowers of a delicate red, sometimes variegated with white; five inches in diameter; the petals are imbricated, numerous, large, and irregularly arranged—those of the centre, smaller.

C. *variegata plena*.—One of the first imported from China, and has to the present day maintained its standing. It is of a vigorous habit; leaves of a deep green, strongly nerved; the flowers sometimes mainly red, streaked with white—in other cases, the white predominates; in all, numerous stamins are visible, giving a sprightliness to its appearance.

C. *donkelari*.—Cherry red, variegated and spotted with white; flowers formed of three rows of petals; the centre filled with stamins, and staminiferous petals. It is esteemed a good variety.

C. *Philadelphica*.—This is an American, raised by Mr. J. B Smith, to whom we have previously referred. It is variable in its habit, sometimes crimson, occasionally rosy, and enlivened by white spots; the exterior petals are regular—the inner smaller, convex. Quite a pleasing addition to the tribe.

C. *Hosackia*.—So named after Dr. Hosack, of New York, by Mr. Floy, with whom it originated. The colour is dark crimson; the petals are much smaller in the centre than in the circumference. Without the prominent arrangement which constitutes a first-rate flower, it is nevertheless desirable.

C. *estheri*.—Another of Mr. J. B. Smith's seedlings. The flower is large, mainly white, and spotted, striped and dotted with rose. It is of the same class with *eclipse*, *colvillei*, &c., and is esteemed the best of its variety. The foliage is fine, and adds to the beauty of the plant.

C. *nivalis*.—This variety may not please all; but its pure white, and the sprightliness imparted by its stamins, give it, we think, a claim to be included in a collection. We are not among those who would reject a camellia because of its want of regularity or the exhibition of a stamin. The foliage is deep green, the growth sufficiently vigorous, and it may be made valuable as the producer of new varieties.

C. *speciosa*.—This is of the Waratah class; the exterior or guard petals as termed by gardeners are large and prominent,

crimson, striped with white; the inner petals irregular, close, rumpled with spots of white.

C. *speciosa.*—Leaves rounded, slightly acuminated, of a clear green, glossy, finely veined; flower large, beautiful, full, of a deep cherry-red; petals of the interior in two or three rows, regular, re-curved upon the calix; those of the centre irregular, numerous, close, rumpled, having a small white spot upon the upper part.

C. *Elphinstonia.*—Leaves roundish, oval, a little dentated; flower large, cherry-red, shaded with carmine, sometimes splashed with white; heart arched; exterior petals pretty large, well arranged in a cup-like form; those of the centre, small, numerous, united, presenting a regular and pleasing sphere.

C. *pomponia plena.*— Leaves acute, recurved downwards, finely dentated, of a dull green; shrub vigorous; branches numerous, and disposed to shoot out irregularly; flower very large, full, and of a pure white; the petals of the circumference are flat, or undulating; those of the centre concave; red at the base; occasional shades of light yellow. This beautiful variety is not uniform in the colour of its flowers; for, often, there are seen upon the same plant, red, rose and white.

C. *Welbankiana*, or heptangularis.—Leaves oval, lanceolated, reflexed, slightly dentated, of a yellowish-green; flower white, double, irregular; petals of the first row, broad, crenated at the summit, grouped in the centre, as in imitation of the union of several flowers contained in a common calix; those of the interior are smaller, erect, rumpled, intermingled with stamins.

We could extend the description to a great length, far beyond the bounds which this little book would warrant; the young amateur may safely order from those we have referred to, or if the "Monography of the *Genus Camellia*," translated from the French, by H. A. S. Dearborn of Boston, be within his reach, he can have full information on all that relates to this delightful tribe of plants. But so far as a choice of kinds go, it is better to see them in bloom, taste is so various.

CINERARIA (*the Cape Aster*).—There are many recent additions to this old genus, which form a pleasing variety, blooming during winter and spring.

CINNAMOMUM CAMPHORA (formerly *Lauras camphora*),—is a tender evergreen shrub; the leaves are strongly impregnated by a camphorean scent, and from its gum the well known drug, camphor, is procured.

CISTUS (*Rock Rose*).—It is unfortunate that this plant, which is so great an ornament to the parterre, in central Europe, should

not support the winter in this latitude. Here it requires the protection usually extended hardy green-house plants.

CITRUS.—(The generic name for the *Orange tribe.*) Some very petty dwarf varieties exist, well calculated for parlour-window culture; they bear fruit when less than a foot in height, are very easily managed, and quite ornamental. The Mandarin, or Chinese dwarf orange, and the Shaddock, or forbidden fruit, are figured in the Floral Magazine.

CLEMATIS (or *Virgin's Bower*).— Of this plant there are several species, which rank with green-house plants. Others which are hardy will be found on page 74.

COBEA SCANDANS, produces large bell-shaped flowers, of changeable hue. It is wonderfully rapid in growth, covering a large surface in a single season. It may be reared from seed, or by cuttings.

CORONILLA.—The C. *glauca* is an old green-house plant, and esteemed as an early and abundantly blooming shrub; producing clusters of yellow pea-shaped flowers.

CORREA; so named in honour of the Abbé Correa de Serra, for some years resident Portuguese Minister, to this country. There are several species, of which, probably, the most attractive is the *speciosa* figured in the Floral Magazine.

DAPHNE.—The D. *odora*, is a well known tenant of the green-house; its delicious odour, and constancy of bloom in winter, will ever make it attractive, however much we may be dazzled by flowers of more pretension. There are several other species, all deserving culture.

DRACANA FERREA.—The *purple leaved Dragon plant*, is a conspicuous object in a collection; and serves to give variety and relieve the eye, when resting on a mass of green.

DIANTHUS, (CARNATION.)—See page 81.

EPACIS.—This plant has usually been considered somewhat difficult to manage; it bears a strong resemblance, in habit and appearance, to the *Heath;* is indigenous to New Holland from whence we have several species, producing beautiful tubular-shaped flowers, some with high colours, others pure white.

ERICA (*Heath*).—The catalogues of some European Nurserymen enumerate nearly five hundred species, and varieties of the *Erica*, principally natives of the Cape of Good Hope, Great Britain, and the south of Europe, &c. At some of the princely establishments in England, ranges of houses are occupied by this tribe alone; and an uninterrupted succession of flowers is maintained. Nothing can exceed the peculiar delicacy, almost retiring modesty of many of this genus; but in this country it

is useless to attempt the culture of any but such as are of robust habit; the heat of our summer, and sudden transition of temperature, proving fatal to most of them. The following named sorts will succeed, with care; the first is, indeed, quite easily managed: *Mediterranea, australis, cinerea, capitata, conferta, rubida, plunketia, vulgaris, arborea, grandiflora, tubiflora, baccans, cerinthoides.*

ERYTHRINA CRISTA-GALLI.—The *Cocks-comb* or *coral plant*, is a great acquisition to the open border; when planted out in rich light loam, its growth is luxuriant, and its racemes of brilliant coral papilionaceous flowers, are produced in rapid succession; on the approach of frost remove it to some sheltered spot, (a dry airy cellar will answer every purpose,) where it may remain dormant until the frost is past, and it is called, in the spring or early summer, to re-occupy its former station. Figured in Floral Magazine.

EUONGMUS.—The *Japonicus argenteus*, of this genus, is a beautiful plant, with silver-edged evergreen leaves, and will most fortunately withstand our winter on dry soil; as a single plant, standing on the border, or the grass-plot, it is a pleasing object, and it cannot but form, we think, a highly beautiful inside hedge; it will also, no doubt, make a suitable edging to walks, if kept well sheared. It has not yet been propagated in sufficient quantity to be applied to these purposes, and has, until recently, been kept wholly as a green-house plant; but it is rapidly increasing, and will in a year or two be abundant.

FICUS.—The *F. elastica* or *India Rubber Tree*, is an attractive object in a collection; the leaves are large, coriaceous, deep green, and polished; they are retained a long while, the plant being evergreen.

FUCHSIA.—The Ladies' ear-drop, has long been introduced, especially the *coccinea*, which still remains the most attractive species. There are a great many hybrid varieties, and very beautiful ones too. Among the more conspicuous are: *globosa, elegans, fulgens, longiflora-superba.* They are easily managed if kept screened from the intense heat of summer, and regularly watered.

GELSEMIUM NITIDUM.—See page 74.

GORTERIA.—The *ringens* and *pavonia* of this genus, are dwarf plants, yielding rather gaudy flowers, which open with the sun, and close at night.

HELIOTROPIUM PERUVIANUM and *Corymbosum* are highly odoriferous plants, heretofore kept nearly exclusively in the hot-house, or half starved in the green-house. It requires strong heat to bloom freely, but its principal value is when plunged or planted out during summer as a border flower; in light rich soil

and sunny exposure, it will grow luxuriantly, and bloom uninterruptedly until the approach of frost. It should be welcomed by all as a delightful inmate of the garden.

HYDRANGIA.—See Hardy Shrubs, page 43.

ILLICIUM.—*Anniseed Tree.* The several species of this plant are very easily kept, and though not remarkably showy, are worth notice, on account of the strong anniseed-like fragrance of the foliage when bruised. I. *floridanum* resembles the sweet-scented shrub, in flower, so much so as to be mistaken for it by a superficial observer.

JAMBOSA VULGARIS, formerly called *Eugenia Jambos* or *Rose Apple*, produces fruit of fragrance not unlike the rose; the foliage is evergreen, and as it is a hardy green-house plant, is deserving notice.

KENNEDIA. A climbing plant, with evergreen leaves, and small pea-shaped flowers, of high colour; some blue, others crimson, and scarlet.

LAGERSTRŒMIA (*Crape Myrtle*). An exceedingly beautiful plant, so hardy as almost to support the winter of the middle states. It may be kept in any dry, airy cellar, under the stage of a green-house, or similar situation; and will generally bloom in profusion, and for many successive weeks, during the summer and early autumn; there are several varieties, pink, scarlet, and purple; the flowers are borne in spikes, which gradually expand, producing an uninterrupted succession. In the southern states, where this plant attains the height of fifteen or eighteen feet, with full round head, it is a brilliant object when in bloom.

LINUM.—There are several pretty species, of this genus; *ascyrifolium* with blue and white flowers, and *tyginum*, with large yellow flowers, are the finest; the latter is figured in the Floral Magazine.

MAGNOLIA.—Two species of this plant require the protection of the house. M. pumila, and M. fuscata, are both highly odoriferous; others, which are hardy, are described at page 63.

MANETTIA GLABRA, (or *cordifolia*, as it is indifferently called,) is a climbing plant, producing scarlet tubular-shaped flowers, in great profusion throughout the summer. Its beauty is more fully developed when planted on a rich border; from whence it may be removed, on the approach of frost, to a place of security.

METROSIDEROS.—A New Holland genus, yielding scarlet flowers, with protruding stamins, which with their peculiar arrangement, have given this plant the common name of *bottle-brush*. There are several species, of which *semperflorens* is, perhaps, the best.

Mimulus Moschatus, *Musk Plant*, is a small species of the Monkey Flower, which has rapidly risen into favour for its beauty and strong musky fragrance: it has the great advantage of not requiring much light, and of thriving in pots in our windows. It is propagated by dividing the roots, or by cuttings, which will strike readily if taken off about three inches long below a joint, and placed under a glass, giving water occasionally. When they have struck, the glass must be withdrawn gradually. They like shade and water: if not sheltered they will die down in winter, but shoot up again in the spring. There are some larger varieties extremely beautiful.

Myrtus.—The *Myrtle* has long been a favourite evergreen in the green-house; the flowers though plain are agreeable, and the fragrance of the foliage, when passed through the hand, is generally admired. M. *tomentosa* is rather conspicuous than otherwise from the variations in shade, which the flowers assume in their several stages.

Nerium, (*Oleander.*)—Of this plant there are numerous species, or perhaps more properly speaking, varieties. N. *Splendans*, *macrophylla*, *luted*, *striata*, are each desirable. The foliage is in itself ornamental, and as they are easily kept, quite an acquisition to a collection of hardy green-house plants.

Passiflora.—The *Passion Flower* is an old and widely known plant, of which the *cærula*, or common blue species, is extensively cultivated. There is a hybrid, *princeps-cærulea*, with blue and scarlet flowers (see figure in Floral Magazine,) beside several others, some with small and very neat flowers, others with gaudy ones. The *P. cærulea* if planted on a rich border and in a warm situation, will run wildly, and cover a large space. Before cold weather re-pot it, and place it under shelter.

Pelargonium, (Geranium.)—These are great and deserved favourites. Every one who has the least taste for flowers procures a Geranium; the varieties are almost endless. It is said the number considerably exceeds a thousand, of course many must closely resemble others, so much so as scarcely to be distinguished. Within a few years a large number of beautiful hybrid seedlings have been produced, which as far exceed the old varieties, as can readily be conceived. The colours are generally brilliant; in some a single shade predominates, others are curiously blotched, striped and shaded in an unique manner.

The whole family are generally kept in pots the year round; but where it can be avoided this is injudicious, a better method at least with the hardier sorts will be pointed out as we proceed. The pots generally employed are too small to allow the root sufficient room to expand; and consequently the flowers do

not attain that size and beauty, nor are they so abundant as they would be, if the plants were turned out during the summer months into an open border, the earth of which is light, containing a mixture of loam and a little well-rotted manure: here they will flower in the greatest perfection during the summer; and all, excepting a very few of the most delicate kinds, will be profited by this treatment.

As Geraniums strike easily during the summer, cuttings should be potted early that they may gain strength to bear the winter; and these will supply the places of those which have grown too luxuriantly to re-pot in the autumn. Young plants are well known to flower best; and therefore, to procure them, cuttings should be taken at the junction of the old and new wood, just below a bud, as it is out of this bud the root will strike: cut smoothly, and do not bruise or leave the bark jagged. A rather warm situation is desirable to facilitate their growth, or place over them a hand-glass; a moderate supply of water is requisite, too much would rot them. The pots containing them must not be placed in saucers or pans, but a good draining must be allowed: standing them on cinder ashes is good. Indeed no pots should be placed in any vessel to retain the water, which should freely run through to wash away the slime and excrementitious matter thrown off by the root. If the cuttings are put in the open ground, they must be shaded with a mat during the heat of the day; many of the leaves (not all) should be taken off, and all flower buds carefully removed. They will speedily begin to grow, and when they are well struck they should be placed in separate pots, housed at the first approach of frost, and they will be ready to supply the place of those which may become overgrown.

Geraniums may be propagated by seed, which generally is produced in July; it should be gathered when ripe, and immediately sowed in a pot, and plunged in a hot-bed or placed under a glass; and in about three weeks after coming up, should be potted separately, and by autumn will be fine plants.

Geraniums flower much more vigorously in young than old wood, therefore the most successful cultivators "head" them, as it is termed, or shorten the shoots (frequently cutting quite close to the wood of the previous year) in the Autumn. In February, shift them into roomy pots and rich light loamy compost; when they are growing freely, give water liberally; but when in a dormant state it should be applied with care and moderation.

The subjoined catalogue may aid those who cannot make a personal selection from the collections kept for sale:

Americana, white, dark spots.
Countess of Munster, white.
Admiral Codrington, blush.

Capitatum superbum, blush.
Ada, white, spotted.
Belvidere, crimson, with dark spots.
Clariesimimum, crimson, dark stripes.
Conqueror, rose, large.
Macranthon, white, large.
Duchess of Clarence, white.
Negro Boy, very dark.
Dennis' Perfection, dark rose.
Garth's Perfection, rosy.
Diadematum, rose.
Amelia, blush.
Celestia, blush.
Pictum, white.
Lilac Perfection, lilac.
Decora, pink.
Incarnatum superbum, pink.
Black Rover, dark crimson.
Paragon, red.
Purple Perfection, bright purple.
Diversum, blush red.
Queen of Whites, fine white.
Grandissinia, dark red.
Gazelle, rose.
Memnon, bright scarlet.
Micans, white, striped.
Augustissimum, dark red.
Agrippina, red, dark spots.
Superbissimum, crimson.
Lord Denman, purple.

PLUMBAGO, *Leadwort.*—The P. *capensis* is a beautiful border plant, and yields a profusion of its lead-coloured flowers throughout the summer; when planted out or plunged for the warm season in a favourable situation, it is much more pleasing than when confined. It is readily kept during the winter, among the hardy green-house plants.

RHODODENDRON, *Mountain Laurel.*—The East Indian plant of this genus, R. *arboreum*, is one of the most magnificent of vegetables. The flowers are of a deep, brilliant crimson, made more distinct by dark spots; and those who have only seen the American varieties, can form but a very imperfect idea of the splendour of this species. Many hybrid varieties have been produced from seed, some of which almost divide our admiration with the arboreum, and all are among the more showy flowers of the green-house.

TECOMA CAPENSIS, formerly *Bignonia Capensis*, is a pleasing plant, and enlivens a collection by its tubular orange flowers during winter; figured in the Floral Magazine.

TEMPLETONIA RETUSA, and glanea, yield scarlet pea-shaped flowers, and deserve notice.

THEA, *the Tea of China.*—Of this plant there are two varieties in our green-houses, said to be the ones grown in India for the production of tea: T. *viridis* and T. *bohea.* They are evergreen shrubs, bearing single white flowers, with yellow stamins, and as an object of curiosity are well placed in a collection.

VERBENA.—Almost any person who can boast a foot square of garden ground, or a window-ledge on which to stand a flower-pot, has a Verbena; and richly does it deserve its popularity. Constant in bloom, rich in hue, and of divers colours and shades, scarcely one being absent, it constitutes in itself a flower garden; it is withal so free in growth, that care or culture is almost superflous.

VIBURNUM TINUS, or *Laurustinus*, is an evergreen shrub, not quite hardy enough to withstand the winter, but readily kept in a light airy cellar, or room, where severe frost does not enter. The flowers are quite fragrant and agreeable; for nosegays in the winter it is particularly adapted, and cultivated by the florists for that purpose.

CHAPTER III.

HARDY ORNAMENTAL SHRUBS.—The shrubbery yields a larger return for the expenditure of time and labour, than any other department of the garden. It demands comparatively little attention, and is prodigal in its acknowledgment of the care bestowed.

After the grounds have been once properly planted, observing to place the shrubs of vigorous growth, and stately habit, in the rear of the borders, and more distant quarters of the garden, giving to each a liberal allowance of good garden mould (for further directions on transplanting, see page 16,) and carefully removing from the vicinity of its roots, the inert clayey loam thrown out of cellars, and which is not unfrequently in the city, used to fill up the garden-plot to the desired level, for on such soil it will be in vain to plant; little will remain to be done, further than to restrain the excessive growth of some, by shortening exuberant shoots, thinning out superflous wood, and to encourage by kindly

treatment, the lagging energy of others. Occasionally, a branch which has become unsightly, has taken a wrong direction, or become exhausted by reason of successive bloom, may need removal. Those which have a trailing habit, may require partial support, which should, however, be given as imperceptibly as possible; (good taste will indicate the propriety of keeping the stakes and frames for this purpose, as subordinate as practicable;) vines and creepers, whether on arbours, trellis, or trained against fences, may need occasional aid, in the proper direction of the branches. Some, as the *Hydrangea* for instance, will have the bloom greatly prolonged, if somewhat shaded, either by a living screen, or one which may be applied or removed at pleasure.

The beauty of the shrubbery will be enhanced if every evidence of declining nature is carefully removed; to this end, all decayed leaves, and faded flowers, and all seed pods, when they are not in themselves handsome, should be plucked. The walks should be kept scrupulously clean; not a weed or spear of grass suffered to show its head, and the edging as neatly trimmed and regulated, as if the operation were but yesterday performed. The surface of the earth should be neatly raked from time to time, and the grass, whether the shrubs stand on it singly or in groups, should be kept closely sheared. If the grasses are of the proper description (the native blue and green grass, and white clover mixed, are among the best kinds) they will assume by this treatment, a carpet-like surface, and verdant hue. In this country, however, it may be more prudent to mow less frequently, during the heat of summer, than is the practice in England, where the humid climate produces free vegetation, even at midsummer.

There are some shrubs usually classed as hardy, which may be benefited by partial shelter during the winter, which is better afforded by inverted kegs, barrels, &c., containing a portion of loose straw, than by closely binding and matting the plant, a method seldom attended with good results, as the circulation of the air is impeded, and the immature wood, and decaying leaves, promote fermentation. On the arrival of spring the shrubbery grounds should be dug, and made mellow by the spade; if the earth be not sufficiently rich, manure may be applied according to the judgment of the cultivator; there is little danger of doing mischief with it in this department. If the plants are crowded, so as to preclude a developement of their beauty, use the knife freely, and if necessary, entirely remove such as may be of the least interest.

AMYGDALIS NANA (*Dwarf Almond*).—This is a pretty early flowering shrub, of low stature, and presents a pleasing appearance when in bloom. The grub-worm is its especial enemy, and

to prevent its depredations an examination of the root, at the junction of the root and stem, from time to time, is needful.

AUCUBA JAPONICA (*Japan Gold Tree*), is an evergreen, the foliage blotched or spotted; it will withstand the winter on dry soil and in partial shade.

ÆSCULUS MACROSTACHYA (*Dwarf Horse-Chestnut*).—The long spikes of white and pink flowers, borne by this variety of the horse-chestnut, recommend it for a place on the rear of borders, or other situations, where room may be found for a bushy shrub. The flowers commence expanding at the base of the spike, or flower stem, and, as the progression is gradual, it is a long while in bloom.

AZALEA (*Wood Honeysuckle*).—This is, unquestionably, one of the most magnificent of American shrubs. The varieties are numerous, and embrace almost every shade of colour, including pure white, from light yellow to brilliant flame. It thrives best partially screened from the sun's rays, and demands a peculiar soil, easily compounded by a mixture of surface earth from woodland, and decomposed turf, or sods, in about equal proportions. The two earliest collections of this splendid shrub, were made at the Bartram Botanic Gardens, and at the Landreth Nurseries, where, it is probable, the finest specimens in a cultivated state still exist.

BERBERIS VULGARIS (*Berberry*).—A native shrub in England, kept in the garden for the sake of the long, pendent, bright red berries which it bears, and which are used for tarts or pickling: it makes good hedges, requires no pruning; and is adapted for any soil. It is propagated either by seeds or layers; the latter should not be separated from the parent tree for three years. The suckers will bear transplanting.

B. *aquifolium*, otherwise *Mahonia aqui*, is a low growing American shrub, first discovered by Lewis and Clark, on their tour to the Pacific. The flowers, which are of a bright orange colour, are borne on upright spikes, a habit very distinct from the common Berberry.—Altogether a desirable shrub, and still quite rare.

COLUTEA ARBORESCENS (*Bladder Senna*).—There are four species of this shrub. The first (*Colutea Arborescens*), a native of Italy, and the Levant, grows ten or twelve feet high, bearing a yellow flower all the summer; the seeds are contained in a bladder-like pod, and are seen on the tree with the flowers. It likes a chalky soil, and is propagated by layers or by seeds, which must be sown in an old hot-bed, or a rich and rather shady border; they must not be planted out till the following spring: they require to have their young shoots shortened to eight or ten inches, or they will soon grow too straggling.

The *Cruenta* comes from the Levant, and is similar to the former. it bears a yellowish-red flower in June and July.

The scarlet flowered (*Frutescens*) blooms in July, growing about four feet high.—These two are propagated in a similar manner to the first.

Corchorus Japonicus (*Globe-flower*).—This beautiful yellow shrub, whose dandelion-like flowers appear early in the year, is often trained to walls or trellises; it looks best when intermingled with some other shrub, such as the China Rose, &c., as the branches are rather bare of foliage. It is easily propagated by layers: cuttings do not strike readily unless under glass. It thrives best in a light rich loam.

Cratægus oxycantha (var. *rubro-pleno*, and *albo-pleno*).—The double flowering red and white Hawthorn, are worth culture for the agreeable perfume, which renders the thorn a universal favourite.

"The *hawthorn bush*, with seats beneath the shade,
For talking age, and whispering lovers made."—Goldsmith.

The multiplex character of the flowers of these varieties, constitute them objects of considerable beauty.

Cydonia Japonica, or *Pyrus Japonica*, as it is more popularly known, is a robust, hardy shrub, which frequently expands its flowers, whilst

"Winter lingers in the lap of Spring."

There are two varieties, the scarlet and the blush or white. Its precocious habit of flowering, must ever render it a desirable fixture in the shrubbery, or parterre; indeed, there has been no out-door plant introduced for many years, which has been so generally sought by the admirers of Flora. Both varieties are figured in the *Floral Magazine.*

Cytissus Laburnum. *Golden Chair.*—A handsome tree to stand in the front yard of a house; the pendent yellow blossoms forming an interesting object as seen from the windows during May, when it flowers. It looks well hanging over lilacs, as it blossoms at the same time: it is very hardy, and requires no pruning except to keep it out of the way of other shrubs, and should never have its shoots shortened. It propagates itself by seed, of which it produces abundance. Some persons allow their children to thread these beautiful black seeds, as beads; but this is dangerous, as they are poisonous.

Calycanthus Floridus, *Sweet Scented Shrub.*—This is known to all acquainted in the least with plants, and is inserted here as a remembrancer to those who may be making a collec-

tion. Its fragrant strawberry-scented flowers are ever hailed as pleasing harbingers of returning summer.

CERCIS CANADENSIS, *Judas Tree*, or *Red Bud*, is one of the earliest ornaments of the American landscape, and gives tone and sprightliness to the naked forest, blooming as it does before a leaf is visible: on that account it is desirable, and should be planted within sight of the windows, that it may be enjoyed by those who cannot support the cutting winds of spring.

CHIONANTHUS VIRGINICA, *Fringe Tree*.—An American shrub, or dwarf tree, of great beauty; the flowers are white, and hang like fringe, hence its popular name. It produces a highly picturesque effect, and is universally admired.

DAPHNE, CNEORUM.—A handsome little evergreen; a native of Switzerland. It is sometimes called the *Garland flower*, and is justly said to be one of the most lovely and fragrant plants known in Britain. It is rather difficult to cultivate, and requires to be planted in an airy exposed situation, in a soil composed of equal parts of light loam and peat. It may be procured for a very trifling sum. It is quite a dwarf, and produces a number of clusters of pretty pink or purple blossoms, from April to September: it is applicable for rock work. D. *Mezereum*, a very pretty plant, about three feet high; it blossoms early in April, sometimes in February—the flowers are red, with a purplish tint. The young leaves shoot just beyond the blossoms; which, being of a fresh pale green, produce a striking contrast and pleasing effect. It is propagated by cuttings, or by the seeds which frequently sow themselves, dropping from the red berries which succeed the flower.

DEUTZIA SCABRA.—This is a pretty shrub, of dwarfish habit, producing white flowers in a wreath-like form, resembling the *Mock Orange*. It will succeed in any open situation, and ordinary garden ground.

GORDONIA PUBESCENS, *Franklinia*.—It is a trite saying, that "a thing to be valued must be far fetched." Such is especially the case with flowers. Whilst our fields and forests abound with the most exquisite productions of Flora, we pass them by in search of foreign favourites;

> "And heedless by the lily stray,
> That blossoms in our path."

The following extract from Landreth's *Floral Magazine*, may introduce the *Franklinia*, to the readers of the Manual.

"There are few, if any, of the larger shrubs, indigenous to the United States, that present stronger claims to admiration than the Gordonia pubescens. Although growing of choice under the

ourning sun of Georgia, it will nevertheless withstand the winter of far higher latitudes, blooming in its season with untiring constancy, and imparting a delicious perfume.

"Many years have elapsed since its introduction to the notice of botanists, by the late venerable WILLIAM BARTRAM, who discovered it, we believe, on the banks of the Altamaha, and, with truly patriotic feelings, named it in honour of his country's benefactor, DR. FRANKLIN. It was not, however, destined to retain the appellation, subsequent examination of its structure identifying it as properly belonging to a pre-existing genus.

"The Gordonia, thus named after JAMES GORDON, an eminent British nurseryman of the last century, embraces but three species; one indigenous to the Island of Jamaica; that at present in our view; and the *Lasianthus*, also a native of this country. Both the American species are truly beautiful; but the *pubescens* is particularly so, and certainly ranks among the most desirable shrubs, or minor trees, whether native or exotic. It attains the height of twenty-eight to thirty feet; the trunk and stem invested with a smooth, somewhat angular bark; the leaves alternate, broad, lanceolate-ovate, slightly membranaceous, the upper surfaces polished, and of a lively green, the under side covered with a silvery pubescence, or down, which furnishes its specific cognomen: on the arrival of frost, they assume a reddish hue, and eventually become highly coloured, presenting a pleasing contrast to the sombre foliage of autumn.

"The flowers are about an inch and a half in diameter; of a cream-white colour, and agreeable odour, supported on very short foot-stalks, giving them the appearance of being nearly sessile, or resting immediately on the branches.

"In the latitude of Philadelphia, it commences flowering in June and July; each branch terminates with a cluster of buds; and a twig thus furnished, presents the flowers in every stage of their existence, expanding in regular succession until October, and frequently November.

"It roots freely when 'layered,' but to insure success should remain undisturbed for two seasons; cuttings of ripened wood, will occasionally root, but layering is preferable.

"The soil it most delights in, is of light loam or a peatty texture; but when once established, it will grow readily in any. Our standard specimen has attained an elevation of twenty feet, and promises still greater altitude.—Thousands of its chaste flowers are annally exhibited, yielding a powerful perfume for the gratification of its numerous admirers."

HALESIA, *Snowdrop Tree.* — The two species, *diptera*, two-winged, and *tetraptera*, four-winged, are both highly ornamental American shrubs; but, like the preceding plant, almost unknown

in a cultivated form in the United States. The abundance of their flowers, and their unsullied purity, made more apparent by the protruding golden anthers, excite our admiration, and entitle the *Halesia* to a prominent position. Its extreme hardiness, and easy culture, is another commendation to notice.

HIBISCUS SYRIACUS, popularly termed *Althea*, is known to all; it is referred to here, to direct attention to certain varieties not generally known; viz., double white, double purple, silver striped leaved, and variegata-superba, a fine seedling variety of the old variegated, which originated, it is understood, at Philadelphia. For the rear of borders, or screens to unsightly objects, the *Altheas* are well adapted: hardiness, quick growth, and long continuance in bloom, are qualities worthy of regard.

HYDRANGEA HORTENSIS, bear the open air very well, though they are often kept in pots, because highly ornamental. The soil most suited for them is maiden loam, taken from a field or common; add to this well-rotted manure: they require abundant watering. Cuttings of the young shoots will strike readily under a hand-glass during the month of May. Pots containing them, if well exposed to the sun during the autumnal months, may be kept through the winter in cellars with little or no water; but they must be brought out early in the spring and re-potted, removing as much of the old earth as possible without injuring the roots. The weaker shoots should be cleared away from the old plants, which will cause the flowers to be larger and of a finer colour. When in bloom they should be sheltered from the mid-day sun, else the flowers will flag and prematurely fade. The H. *quercifolia* is an American plant, and entitled to regard; though not so showy as the Chinese, it is certainly very graceful and picturesque.

HYPERICUM. *St. John's wort.*—There are numerous species of this genus, several of which are natives of America, others of the south of Europe, China, &c., bearing neat yellow flowers.

KALMIA, *Laurel.*—The *angustifolia, narrow-leaved laurel,* and *latifolia, broad-leaved* do., are American shrubs, of much beauty; the latter is a great ornament to mountain scenery, and when transplanted to a damp shady situation in the garden, never fails to please; the filaments or thread-like portions of the flower, are sensitive, and spring forward on being touched, casting the pollen on the stigma.

LIGUSTRUM EUROPA. *European Privet.*—This shrub, almost an evergreen, is used for ornamental hedges, also for screens. It bears the shears tolerably well, but is injured by the heat in this country, and assumes a brownish hue at mid-summer.

MAGNOLIA OBOVATA.—The *Purple Magnolia* is the only hardy species, which may properly be called a *shrub*. The following extract is from the *Floral Magazine:*

"ALTHOUGH the present species of this attractive genus has become known to the scientific, and numerous amateur cultivators of plants, yet its fine qualities demand a more general introduction, and we trust the graphic drawing which accompanies this notice, will tend to its extension to the gardens of the more remote sections of our widely extended territory, in almost every portion of which, the presumption is, it will bloom with freedom—certain are we, that it bears uninjured an intensity of cold, and in this latitude flowers freely among the earlier vegetables that display their inflorescence in the spring. In April, when this drawing was executed, some hundreds of flowers adorned our parent plant, which had been exposed the preceding, and many former winters, to all the vicissitudes of our restless climate; and, from the profusion of buds then unexpanded, it would remain many weeks in bloom; indeed, it is not unusual for a luxuriant specimen, to continue partially in flower, from early in the spring to the close of autumn.

Its native soil is China, where it probably attains a greater elevation than in this country. Here it is but a shrub, though perhaps from that circumstance not the less valuable, as it admits of its insertion in gardens of limited extent, or it may be kept in pots, to ornament the parlour or the green-house. It is highly probable that it would thrive enarched upon the *acuminata* or some other fast-growing species, and in that form, *trees* might be procured, possessing all the character and beauty of the shrub. A light loamy soil, well cultivated, and enriched, is congenial to it: much water is not essential, either to this or many other species of Magnolia, as the inexperienced generally suppose, from the fact of the more common kind, the *glauca*, growing in swampy land. It is readily increased by layers, or by suckers, which spring up in considerable number.

For other Magnolias, see page 63.

PHILADELPHUS, *Mock Orange.*—The two species most worthy of notice, are the *inodorus*, or scentless; producing the inflorescence in a wreath-like form, and the *grandiflorus*, with large flowers, and prominent yellow anthera. They are robust, and almost any situation and soil will suit them. The P. *Coronarius* or common Syringa, is very much esteemed, on account of the scent of its white flowers, which Mason calls—

> "The sweet Syringa, yielding but in scent
> To the rich orange."

The leaves have very much the smell of fresh cucumbers, and

are sometimes used to flavour spring salads. It is very hardy, and will bear our hardest winters; but after it has begun to shoot in spring, its tender leaves and blossom buds are sometimes injured by the cold, and it should not therefore be planted in any very exposed situation. It will grow in any close place, endure any soil, and thrive under the drip of trees. It may be propagated by cuttings planted in October, or by the suckers, which it sends up in abundance.

PINCKNEYA PUBENS, *Georgia-bark Tree.*—Like too many others of our native plants, this is almost unknown. It is rather tender in the middle states, but as an interesting American shrub, is entitled to a position in all grounds pretending to possess a general collection. A light wood-earth soil, is most congenial to it; and protection by matting, or otherwise, in winter is required.

PYRUS JAPONICA.—See page 46.

RHUS CONTINUS.—*Venetian Sumac* or *Mist Tree*, frequently erroneously termed fringe tree, which (see page 47) is a curious shrub; the extremities of the branches being covered by masses of russet coloured down. It is, from its singularity, worthy of general culture, and succeeds in most situations.

ROBINIA HISPIDA, *Rose-Acacia.*—This may not need description, being well known. Its beauty has been made more conspicuous, by engrafting it on the pseudo-acacia, which gives an elevated head, and more graceful appearance.

ROSA, *The Rose.*—There is an almost endless variety of this beautiful flower; many of which, as the Cabbage, the China, and Scotch, require very different treatment. All Roses thrive best in a rich loamy soil; but owing to their throwing off a great quantity of excrementitious slime, they require to be moved at least once in three or four years, or the plants will deteriorate, and not produce fine flowers. The Cabbage or Province Roses, the French, and Moss, are all to be treated in the same manner; and whether kept as dwarfs or standards must be annually pruned. To keep Roses long in flower, gather the flowers as fast as they fade close to the stem, nipping off any hips that may form.

Standard Roses are now very much cultivated. In some cases a leading shoot is trained to a stake, (the plant being divested of all its branches;) at four or five feet high it is topped, and then allowed to branch out into a head, which is kept closely pruned. Standard Roses may also be obtained, by budding the sort desired on young stocks of the Dog Rose, or Sweet Brier, which have been placed in the desired situation the year before, as they will by that means be well established. Pruning must be particularly attended to in all Roses except the China; for if this is neglected

the plants will speedily degenerate, the stems becoming bare: it is a mistake to think that by closely pruning the number of flowers will be lessened; on the contrary, more and finer flowers will be produced. The shoots, however, must not be uniformly cut to within a short distance of the stem; but the strong and vigorous shoots should be annually shortened to within six inches of the base, while slender and weak shoots should be cut to within three or four inches; young suckers, not required for layering, should be pruned down to within six inches of the soil, to supply the place of the old wood, which should be cut out: when suckers are too numerous, they should be eradicated. Standard Roses require to be very closely pruned, in order to make them form a uniform and compact head. The young shoots should be annually cut to within two or three inches of the part they started from; and when the head becomes too large, some of the old wood must be cut out, allowing the young shoots to supply its place. Pruning should be performed in March. Standard Roses, when carefully pruned, are among the most beautiful objects of the garden. When they flower, each will present the appearance of a dense cluster of blossoms, and occupy but little room; they however require support by a stake, and no suckers must be allowed to remain.

Several sorts of insects infest the Rose; the best way to get rid of them is to pluck off the leaves or flowers affected, and burn them. The green fly must be destroyed by fumigations with tobacco smoke. [The *Alphis Rosea*, plant louse, is the green fly alluded to by the English editor. It may readily be exterminated by syringing the plant once or twice with a solution of tobacco, or weak whale-oil soap, afterward rinsing with clear water.]

Roses are propagated by layers. The China by cuttings, which strike under a hand-glass; this should be done early in the spring.

In layering Roses, and other shrubby plants, it is only necessary to run a penknife through the shoot to be layered, at a bud or joint; and, having slightly twisted the shoot, so as to open the bark, bury it about three inches below the surface of the soil, treading the soil slightly round it, so as to place it almost erect.

The Rose has become so numerous in variety, that cultivators have arranged them into several classes, by which means they are more easily recognized, and their quality understood.—The following, which we have extracted from the catalogue of D. Landreth, & Fulton, may enable amateurs who cannot see them in bloom, to make a selection without disappointment.

THE BENGAL EVER-BLOOMING ROSES, comprise the old Chinese varieties, monthly or daily, as formerly called, with the new varieties of similar character; a little protection in winter is advisable.

Animated—rosy blush, very profuse.
Admiral Duperre—rosy pink.
Arsnie—delicate rose, extra fine.
Augustine Hersant—dark rose, fine.
Archduke Charles—changeable rose.
Belle Isidore—rosy crimson, cupped.
" de monza—light crimson.
Bengal triumphant, superb large crimson, very double.
" Don Carlos—deep rose white stripe.
" Queen of Lombardy—rich cherry red, superb.
" Eugene Beauharnois—rich velvet crimson.
" fabvier—bright scarlet.
Bengal grandida—rich blush, tipped with pink.
" Marjolin de Luxembourg—deep crimson.
Bison—delicate rosy blush,
Belle violet—light rose.
Clintonia—dark rose.
Cramoisie, superieur— } superb dark crimson,
" *Bengal Agrippina*, } very double.
Cels, or Bengal Cels—flesh colour, extra fine.
ChameleonDesprez—changeable pink,and rose chameleon.
Carmine D'Yebles—carmine and white.
Fenelon de Luxembourg—crimson.
Grandval—brilliant crimson.
Hibbertia—pink, finely cupped.
Hortensia—flesh-coloured, fine.
Hamilton—large dark pink.
Indica albaor—white daily, pure white, very profuse.
Jacksonia—or hundred leaved daily, bright red.
Louis Philippe—dark crimson, superb.
Lawrencia—delicate rose, the smallest of all roses.
La Renomme.
Miellez—pure white.
Mrs. Bosanquet—large blush, superb.
Queen—changeable rose.
Semperflorens—or sanguinea, rich crimson.
Samson—light rose.
Triomphe de Grand—rosy lilac, fine.
Vanella—dark crimson.

THE TEA.

These are likewise ever-blooming, with the addition of the peculiar odour which has given such celebrity to this division of the family; the varieties have multiplied greatly, and are all much sought after; with slight protection they will stand the winter if the soil be dry.—[See remarks on protecting out-door plants, at page 71.]

Aurora—rich straw colour.
Alba—pure white, profuse.
Augustine Margat—bright rose.
Aristides—very double rose.
Arkinto—pale rose.
Aurora Nova—large pale yellow.
Belle Margueritte—large pale rose, fine.
Bougere—light creamy yellow.
Bon silene—superb red, perfectly double.
Bourbon—creamy white.
Burette—rosy crimson.
Barbot,
Camellia—large white.
Clementine Duval,
Charles Desprez—light rose.
Ceterie—brilliant rose, fine.
Countess of Albemarle—long white, fine
De Veau—rich blush.
Drummond—blush white.
Devoniensis—superb yellow.
Eliza Sauvage—pale yellow.
Flon—fawn colour, large and fine.
Golconda—creamy blush.
Gigantesque de Lima—yellow, fine.
Goubaut—superb red.
Gloria De Hardy—light rose.
Hymenea—creamy white.
Jaune panachè—pale straw colour.
Lilicine—shaded lilac.
Lyonaise—bright red.
Lady Warrender—white.
La Pactole—yellow, very large.
Madam Desprez,or *Bengal Madame Desprez*—finest white.
Mirabilis—white.
Marlait Laboulais.
Niphetes—pure white.
Odorata—or *common tea rose*, blush.
Odoratissima—rich blush.
Princess Maria—shaded buff.
Prince de Esterhazy—light rose.
Pæoniflora—large rose.
Rubens—rosy red.
Strombio—blush white.
Triomphe de Luxemborg—rosy blush—very fine.
Victoria modeste—blush, large and fine.

The NOISETTE or CLUSTERS, are so named from the old

NOISETTE ROSE, and includes the well-known *Champney*; they of this division are all free flowers, and bloom in clusters, some of them grow rapidly, many to the height of twenty or thirty feet, when trained, as witnessed in the *Champney* and *Monstrous Noisette*; others have a more dwarfy habit—hardy.

Alba—creamy white, fine.
Amie Vibert—pure white, extra fine.
Amie—rose.
Countess de Grillon—blush.
Euphrasie—yellow.
Gabriel—blush, fine.
Bengal Lee *monstrosa*—creamy blush, very fine.
Cadot—blush lilac.
Charles X.—purple, fine.
Conque de Venus—white rose centre.
Charmante—rosy white.
Cœur jaune—white, yellow centre.
Champneyana—rosy white, very profuse.
Donna Maria—superb pink.
Fellemrerg—superb crimson.
Jaune de prez—rosy yellow, very fragrant.
Julienne le sourd—dark rose, extra fine.
Lamarque—large greenish white, superb.

GARDEN ROSES.—Under this head are arranged all those which bloom but once in the year; many of them are magnificent, greatly excelling the varieties of former days.

Africana—very dark.
Aurora—rosy pink.
Aurora Borealis—shaded rose.
Belle Crimson—fine crimson, cupped.
Belle amabile—red, fine.
Belle violet—violet.
Chancellor—light red.
Colour de Merri—blush white.
Duchess de Berri—rose.
Dark violet—fine rosy violet.
Dwarf Proliferus—rose, profuse.
Delicatesse—delicate pink.
Damask white—white, fine.
" Red—red.
Early ranunculus—pink, extra.
Flanders—rosy purple.
George the IV. [*River's*]—superb pink.
Harrisonia, or *Hogg's Yellow*, } bright yellow, extra fine, flowers freely.

Imperial—crimson, fine.
" Red—rich red.
" Superba—light pink, large and fine.
King of Reds—bright red, neatly cupped.
Mirabile—superb pink, extra fine.
Moss—common rose colour.
" du Luxumborg, or crimson.
" crested, or crested Provins.
" crimson—dark rose, fine.
" white Bath—pure white.
Nonsuch—pink.
Nigrora—dark pine, fine.
Nigretenne—very dark rose.
Nonpareil—rose red.
Normandy—violet red.
Ombre superb—dark red.
Pompadore—changeable purple.
Provins cabbage—rosy pink, very double.
" crested—blush, large and double, very superb.
" white or unique—large white.
" red—light red.
Prolific—blush.
Primer noble—rose red.
Queen of roses—superb rose.
Ruschenberg—(madam), } shaded lilac, very large and double.
Rosa Dingiensis—dark crimson.
Rose Ferrique—violet crimson.
Sanspareil—shaded crimson.
Striped nosegay—superb cherry red.
Susannah—cupped rose, fine.
Sweet briar, common—single pink leaves, fragrant.
" double white—creamy white, fine.
" double red—red, very fine.
Tuscany—very dark crimson.
Triumphant—rosy red.
Virgin's blush—rich blush.
York and Lancaster—red and white.

NOISETTE ROSES.

La Biche—flesh coloured.
Lady Byron—brilliant pink, fine.
Lafayette—fine pink.
Lutea or Smithii—light yellow.
La Sarmenteus—blush white.
Landreth's Carmine—superb carmine, (immense clusters.)
La Nymphe—pale rose.

Mignon—white.
Miss Simpson—superb blush.
Orlof—brilliant pink.
Princess de Orange—creamy white.
Pompone—rosy pink.
Sir Walter Scott—rosy lilac.
Superba—blush white, profuse.
Susanna—creamy white.
Sultana—light red.

CLIMBING ROSES.

Ayrshire—double blush, fine.
Banksia lutea—double yellow.
" alba—double white.
Boursalt—rose colour.
" purpurea, purple, profuse.
" blush, large blush.
" gracilis, bright rose.
Bengalensis scandens—large rosy white.
Felicit de perpetua—blush white, fine.
Greville, { produces immense clusters of various colours and shades from white to crimson.
Multiflora—pink perfect.
" alba—blush white.
Rubifolia—Michigan or prairie.—in variety.
Russelliana or cottage rose—purple crimson, superb.
Sempervirens pleno—superb white.
Triomph de Bollwyler—blush white, superb large clusters.

Isle de Bourbon.

This class is probably the most delightful of them all; it comprises a number which combine the free blooming habit of the *Bengal*, with the perfume of the old-fashioned garden roses; and, uniting their properties, bid fair to supersede most others:—they are sufficiently hardy to withstand the winter, on dry soil, in the middle states.

Augustine Lelieur—dark rose.
Henry Planter—rosy red.
Hermosa—light rose.
Jacques—bright rose.
La Brun—rose, large and fine.
Marschale de Villars—rosy purple.
Madam Desprez—dark rose, extra fine.
Emily Courtier—purple.
Faustine—blush.

Gloria de France—monthly cabbage.
" de Algiers—light purple.
Ida Percot—lilac.
Julia de Lyons—white.
Madame Margat—dark rose.
" Nerard—blush colour.
Ninon de L'Enclos—violet purple.
Pauline Plantier—rose.
Pucella Genoese—flush colour.
Queen—deep blush.
Splendens—light rose.
Theresita—bright carmine.
Thimocle—rosy shaded lilac.

MICROPHYLLA.

These have foliage of a very distinctive character, and much admired, on that account, as well as for the flowers; free bloomers, hardy.

Maria Leonida—white, extra fine.
Microphylla—rose colour superb.
" du Luxemborg.
" Nouveau rouge.
" odorata alba—creamy white, fragrant.

MUSK-SCENTED.

This class is formed from those which have the fragrance of the old "white cluster," or "musk-scented," a well-known variety, which has long supported its popularity;—hardy.

Moschata—white, semi-double.
superba—pure white, very double.
Frazerii—blush or pink.
Princess de Nassau—white, double.

Some cultivators of Roses have made other subdivisions, as Perpetual, Hybrid-China, &c.; but there is so much confusion on the subject that we pass them by. The increasing taste for this charming flower, and the many new varieties which are annually produced, will ultimately require a more critical classification.

SPIREA.—There are several beautiful species of this genus, among which may be specially named *hypericifolia*, *salicifolia*, *tomentosa*, and *bella*: there are others of herbaceous habit: see page 76.

SPARTIUM SCOPARIUM, *Scotch Broom.*—Common as is this plant in Europe, it is here comparatively little known, to the dis-

advantage of our gardens. Its early bloom, and deep green stems and leaflets, make it a pleasing object. In the middle states it is sometimes disfigured by the severe weather. *S. junceum*, the Spanish broom, produces white flowers, and is likewise ornamental.

STEUARTIA.—Two species, the *malocondendron* and *pentagyna*, both yield showy white flowers, one with purple anthers, the other with yellow; they continue in bloom many weeks, and merit notice, but being natives are but little known! fine specimens are growing at Bartram's and Landreth's nurseries.

STYRAX.—There are several shrubs of this genus, which flower freely, and from their moderate growth, suited for town gardens. S. *grandifolia* and S. *lavigatum*, are the most prominent. S. *officinale* is a low tree, with slender branches, flowers in racemes, from their sides. Storax is obtained from this tree in Asiatic Turkey. They all succeed in good garden soil, but flower more fully in an open airy situation.

SYMPHORA RACEMOSA, *Snowberry*.—This is one of Lewis & Clark's plants, and attracted much notice on its first introduction; it is now widely diffused, and known to all. The first plants were grown from seed by the late Mr. McMahon, the author of a useful work on gardening.

SYRINGA, *Lilac*.—The cut-leaved Persian, *persica lacineata*, and the white Persian, *persica alba*, yield pretty delicate flowers in pendulous clusters: the perfume is also delicate and highly agreeable.

VIBURNUM OPULUS *var roseum*.—The *Snowball* is endeared to many of us by the recollections of childhood, and on that account will secure a niche, which might be filled by a more brilliant flower. All that it requires is room and air: its hardy habit will be its own protector.

CHAPTER IV.

HARDY DECIDUOUS TREES.—The descriptive catalogue of Deciduous Trees, (that is such as shed their leaves in autumn,) has been drawn so as to embrace a portion of nearly all the prominent genera; and from the character as appended to each, it may be seen which are the most suited to the lawn and pleasure ground, and which the street. Many of them are fully known to country residents; but as this work, unpretending as it is, will probably get into the hands of persons in every location, it has been thought advisable to describe the native as well as foreign kinds.

Shrubs and flowers, with their varied hue and form, afford us

gratification which is to be highly prized; but it is TREES which beautify the landscape, and give much of the pictorial and physical character to a country. As Americans we may justly be proud of the diversity of our forest trees: among them are those most useful and most magnificent—but as Americans we must regret they are not, except in a mercenary point of view, more fully valued. Even in the thickly settled portions of our country, how few comparatively look upon them with any other eye than to their cubic contents! the result is, that frequently the most beautiful are felled, and few for ornament are planted; whilst *Landscape gardening* is scarcely known by name, much less by its effects, in the United States. It is not intended by these remarks to convey the idea, that the elegance of design, and broad expanse of an English noble's lawn, should be copied in this country; to do that, something else beside land and trees is necessary; but how much may be accomplished by the means at our command, and if our rural residents would but follow the Scottish Laird's advice to his son, to plant trees habitually, we should see the country assume a more cheerful tone, and if they were placed judiciously would, instead of becoming an encumbrance, ultimately yield profit: not a spear of grass the less need be the consequence: the eye would be gratified, the owner profited, and his cattle find shelter from the mid-day heat.

How animating is the prospect of a luxuriant pasture, studded here and there with noble trees, which have been suffered to extend their branches with the freedom of nature! It will be said, that though adapted to the meadow, trees are an encumbrance to the plough land; true—if in excess, but if in moderate numbers, prudently placed, the loss from shade of grain, would be counterbalanced by the shelter to cattle in the succeeding grass crop; still were it not so to the exactness of a farthing, should those "who live under their own vine and fig tree," with ample means for life's enjoyment, measure every act by the inexorable rule of dollars and cents?

ACER, *Maple.*—The scientific name is derived from a Latin term, significant of sharp, from the wood having formerly been made into the heads of pikes. There are many beautiful trees of this genus, of which the American forests produce a full share; for instance, *A. saccharinum*, the sugar maple, with its fine round symmetrical head, and deep green leaves, changing in the autumn to every shade of orange. The *A. desycarpum*, or silver-leaved, from their surface having a silver hue. The *rubrum*, or scarlet flowering, the *negundo*, or ash-leaved, &c. Among the European we may notice the *pseudo-plantanoides*, or sycamore, (observe a very distinct tree from the buttonwood, sometimes so called,) which abounds in the greater part of Europe. It is remarkably

hardy, and will grow with an erect stem, exposed to the highest winds; but the foliage is, unfortunately, liable to the attack of insects. The *A. Platanoides*, or Norway maple, also abounds in Poland, Lithuania, Switzerland and Savoy; on a tolerable soil, it attains a large size. The leaves being smooth, of a shining green, and seldom defaced by insects, it may be termed a tree of great beauty. The leaves of this species also die of a golden yellow colour, producing a charming effect in autumn.

Æsculus, *Horse Chestnut*, is so called because it was once used in veterinary medicine. The *Æ. hippocastana* is a magnificent tree, at once grand from its magnitude and massy form; and beautiful when in bloom, from being covered with large spikes, of delicate white and pink flowers, protruding from among its elegant digitate leaves. There are other species, as the *flava*, yellow flowering; *pavia*, scarlet flowering; and *Ohioensis* or true buck-eye; the latter a fine tree, but not equal in beauty to the *hippocastana*.

Ailanthus glandulosa, *Tree of Heaven.*—This is an East India tree, of rapid growth, and adapted to the poorest soil. The leaves are pinnate, and of great length. Many have been planted in the city streets, but at present trees of greater durability are preferred. It is unsuited to land where the sub-soil retains moisture in excess; in such soils they not unfrequently die, during winter.

Betula, *Birch.*—The *alba pendula*, or white weeping birch; the *papyracea*, or canoe-birch, and the *populifolia*, or poplar leaved birch, are the more prominent kinds. They are trees of vigorous constitution, and succeed even in unfavourable situations.

Catalpa cordifolia.—This is known to most Americans, from its large clusters of white purple-spotted flowers; succeeded by long seed-vessels, which, from their shape and grouping, have given it the name of Candle Tree. It is not well adapted to street planting, but is highly ornamental on the lawn.

Cupressus (*Taxodium.*) *Deciduous Cypress.*—A truly beautiful tree, abounding in the low lands of the South, but perfectly hardy in Pennsylvania, where well-grown specimens exist; the largest of which is at Bartram's Garden, planted by the venerable founder of that interesting place. The Cypress loves the deepest and most gloomy swamps, yet flourishes well on upland soil; and from its noble cone-like form, greatly beautifies the landscape. When grouped with trees of globular form, it produces an agreeable variety.

Fagus, *Beech.*—There are several species of this tree, but the one of principal interest, is the *atro-rubens*, or purple-leaved, which, from its deep mahogany-coloured foliage, is remarkable

and greatly aids the picturesque effect when mixed with other trees, or in the shrubbery. It is propagated by engrafting on the common Beech, and may be obtained at the nurseries around Philadelphia. A fine specimen exists at Landreth's.

FRAXINUS, *Ash.*—The *F. americana*, and *F. excelsior*, the European, are large forest trees, well adapted for shade and ornament. The *F. excelsior-pendula*, or weeping ash, is a curious tree; its branches incline downwards, and with training may be made to form a living summer-house, or other fanciful structure.

GYMNOCLADUS CANADENSIS, *Kentucky Coffee Tree*, is of peculiar aspect; having but few secondary branches, the limbs show conspicuously, when the foliage has fallen; and produce a good effect.

LIRIODENDRON TULIPIFERA, *Tulip Tree.*—This is one of the many grand productions of the American forest; no less admired for its clear polished foliage, than its showy tulip-like flowers. It were needless to say one word in its praise, so generally is it known and admired. For street planting it perhaps grows too large, unless where there is great breadth of foot-path, or the buildings recede from the line of the street. In such situations there can be nothing better: around massy public buildings, its effect would be imposing.

MACLURA AURANTIACA, *Osage Orange.*—An indigenuous tree, first discovered by Hunter and Dunbar, on the banks of the Little Missouri; and named by Nuttall, in honour of our townsman, the late Wm. Maclure, Esq., "a philosopher whose devotion to Natural History, and particularly to the geology of North America, has scarcely been exceeded by Ramond or Saussure, in Europe." There are several fruit-bearing trees around Philadelphia, reared by the late Mr. McMahon from seed, procured by Lewis and Clark when on their expedition. It is dicœcious, having the male and female flowers on different plants. A large solitary tree, at the Landreth nurseries, produced for several successive years, some bushels of fruit, which prematurely fell, after attaining the size of an orange. The expedient was adopted of tying it on the branches with staminiferous flowers, obtained from a distant tree; the result was entirely successful, and many thousands of young plants have been reared from seed thus perfected. The experiment has been repeated again and again, as we have been assured, and with invariably the same effect. The foliage of the *Maclura* is of a deep green, highly polished, and from abounding in acrid juice, is seldom attacked by insects.

The young plants are armed with formidable spines, and from the experiments made, seem admirably suited for hedges: much more so than the thorn. A hedge of it at Mr. Maupay's, but a

few years planted, already affords entire protection against cattle.

MAGNOLIA.—This genus derives its name from Pierre Magnol, prefect of the Botanic Garden, at Montpelier. There are many species, of which those indigenuous to this country are most remarkable. The *M. conspicua*, or chandelier, in allusion to its mode of inflorescence, is a native of Japan; and is as hardy as the hardiest of our trees. Its blossoms are yielded in profusion, and among the earliest flowers of the spring: the growth is free, and when engrafted on the *acuminata*, attains a large size. The largest specimen it is supposed in the United States, is at the Landreth nurseries. It is now, 1844, twenty-five feet high, *and annually produces many thousands of its creamy-white flowers.* At those grounds, and also at Bartram's, may be seen the finest specimens of the native sorts, to be found in this quarter; among them the *cordata*, or heart-shaped leaved, *auriculata*, *macrophylla*, *tripetala*, *acuminata*, and *grandiflora*; the latter is figured in the *Floral Magazine*, from which the following is extracted.

"Vast as is the range, and numerous the variety in the forests of the United States, perhaps no single tree surpasses the *Magnolia Grandiflora* of the south. Mr. Nuttall, ("*Genera of North American Plants*,") styles it "the most magnificent tree of the southern states, whose trunk often presents a living column of eighty or ninety feet elevation, almost unobstructed by branches, and terminated by a spreading top of the deepest perennial verdure." The leaves of this "Prince of the Forest," to use the language of *Pursh*, are entire, and of a coriaceous or leather-like texture; the upper surface of the darkest green, with the brilliant polish of mahogany; the under surface varies in different trees and situations.—In some it is of a clear, light green, in others covered by a rusty coloured down; the flowers are cream-white, cup-shaped, until fully expanded, when they assume a salver form; we have measured them at our nurseries 33 inches in circumference, and it is probable, that in their native region, they are still more luxuriant. The odour, which may be inhaled at a considerable distance, is that of the citron; not so powerful as in the *M. glauca*, but more lively and exhilarating. It is a hardy tree, though when quite young, needs slight protection during winter, in this latitude. Our standard specimen has reached an elevation of thirty to forty feet, and yields abundant bloom; its beautiful evergreen foliage, unscathed by the severest frost." The specimen just alluded to has, we believe, died since that description was written.

PLATANUS, *Plane Tree, or Button-wood.*—The common American species, *occidentalis*, is a noble tree, fit emblem of our forests. Unfortunately it has fallen into ill health, but it is to be hoped the evil is but temporary. A new species, the *racemosus*,

or Californian, has recently been discovered by Nuttall, in Upper California. "At first view," observes Mr. Nuttall in his supplement to the North American Sylva, where a beautiful drawing is given, "it would be taken for the ordinary species, spreading out the same serpentine picturesque limbs, occasionally denuded of their old coat of bark, and producing the same wide and gigantic trunk, but a glance at the leaves no less than the fruit, would remind the eastern traveller that he sojourned in a new region of vegetation, and objects apparently the most familiar he met around him, associate them as he would, were still wholly strangers.

The leaves not fully expanded were about 4 inches wide and the same in length, divided more than half way down into five sharp pointed, lanceolate portions, of which the two lower are the smallest; all the divisions are quite entire, two of them in small leaves are suppressed, thus producing a leaf of only three parts. Above, as usual, the surface is at first clad with a yellowish copious down, formed of ramified hairs, which quickly falls off and spreads itself in the atmosphere. The under surfaces of the leaves are, however, always copiously clad with a coat of whitish wool, which remains. The young leaves, clad in their brown pilose clothing, have a very uncommon appearance, and feel exactly like a piece of stout thick woollen cloth.

The wood of this species, as far as I could learn from the American residents at St. Barbara, is far preferable to that of the common Buttonwood, being much harder, more durable, less liable to warp, and capable of receiving a good polish; it is of a pale yellowish colour, like the young wood of the Oriental Plane, and bears some resemblance to beech wood in its texture. In the radiation of its medullary vessels, it resembles the wood of the common species."

The Oriental Plane, *P. orientalis*, bears some resemblance to the common American, but on comparison, the difference is easily observed. We have searched in vain on this species for the disease so prevalent on the common one; henceforth, therefore, should the disease continue, it will be more prudent to plant the orientalis; the following description of it is copied from Nuttall:

"The Oriental Plane (*Platanus Orientalis*) deserves to be planted in the United States as an ornamental tree. It grows to the height of from 70 to 90 feet, with widely spreading branches and a massive trunk, forming altogether a majestic object. The leaves are more deeply divided and indented than in our common species. A native of the East, where shady trees are not so abundant as in North America, it was celebrated in the earliest records of Grecian history. Xerxes, it seems, (according to Herodotus,) was so fascinated with a beautiful Plane tree which [illegible] encircled it with a ring of

gold, and confided the charge of it to one of the Ten Thousand. He passed an entire day under its shade, encamping with his whole army in its vicinity, and the delay so occasioned was believed to be one of the causes of his defeat. Pausanius (A. D. 170) mentions a Plane tree of extraordinary size and beauty in Arcadia, which was said to have been planted by Menelaus, the husband of Helen, and to have been at the time he saw it 1300 years old.

Plane trees were planted near all the public schools in Athens. The groves of Epicurus, in which Aristotle taught his peripatetic disciples; the shady walks planted near the Gymnasia and other public buildings of Athens; and the groves of Academus, in which Plato delivered his celebrated discourses, were all formed of this tree.

The remarkable Plane tree at Buyukdere, or the Great Valley, mentioned by Olivier, the naturalist, and after him by Poucqueville, Hobhouse, and various other writers, has a trunk that presents the appearance of 7 or 8 trees, having a common origin, which Olivier supposes to be the stool of a decayed tree, and which were all connected at their base. Dr. Walsh, who measured the tree in 1831, found the trunk 141 feet in circumference at the base, and its branches covered a space of 130 feet in diameter. The trunk divides into 14 branches, some of which issue from below the present surface of the soil, and some do not divide till they rise 7 or 8 feet above it; one of the largest is hollowed out by fire, and affords a cabin to shelter a husbandman. The tree, if it can be considered a single plant, is certainly the largest in the world. But what renders it an object of more than usual interest, is that M. Decandolle conjectures it must be more than 2000 years old.

The wood of the Oriental Plane in the Levant and in Asia is used in carpentry, joinery, and cabinet-making. It is said to make beautiful furniture, on account of the smoothness of its grain, and its susceptibility of receiving a high polish."

SALISBURIA ADIANTIFOLIA (the *Ginkgo*, or, *Maiden-hair Tree*).—The Salisburia is a native of Japan and China, and forms a large tree in its native country. Bunge, who accompanied the Russian mission to China, states, that he saw one with a trunk nearly forty feet in circumference. Mr. Loudon says, the tree grows with considerable rapidity in the climate of London, and has attained the height of forty or fifty feet, in as many years. The longevity of the Salisburia promises to be great, as the largest trees in England continue to grow with as much vigour, as when newly planted. The highest tree there, planted in 1767, was, in 1838, above sixty feet.

It was introduced into the United States, by Mr Hamilton, in

1784, and the tree now growing at the Woodlands, near Philadelphia, is, doubtless, the one then imported. A specimen at the Landreth Nurseries, when planted is unknown, has attained the height of 50 feet and continues in fine health. There is also one of considerable size in the Mall, at Boston.

In China and Japan, the Ginkgo tree, is grown chiefly for its fruit. The nuts are generally exposed for sale in the markets, and are never omitted at entertainments; entering into the composition of several dishes. The Salisburia, it is said, will not thrive where the sub-soil is wet, but the contrary has been proved; the specimen at Landreth's growing with remarkable vigour on soil resting on a strong brick clay. It may be propagated from cuttings, or layers.

Sorbus aucuparia (*Pyrus aucuparia*).—*The European Mountain Ash* forms an erect stemmed tree, and, when fully grown, assumes a roundish head. It grows rapidly at first, but soon begins to form a head; it does not bear lopping, but grass will grow freely under its shade. The Mountain Ash, is found in most parts of Europe, from Iceland to the Mediterranean sea; and is also found in Asia. In various parts of the north of Europe, the berries are dried, and ground into flour, and used as a substitute for flour made of wheat, in times of great scarcity. Infused in water, they make an acid drink, somewhat resembling Perry. It is planted in all churchyards, in Wales, as the yew is in those of England. As an ornamental tree, the Mountain Ash is well adapted for small gardens;—in summer, the light green tint of the foliage, and in autumn, the glowing berries, contrast beautifully with the deeper green of other trees. In suburban gardens, in England, it makes a great display, by means of its fruit;—it never requires pruning, and never grows out of shape. They are raised from seed, or more readily obtained from well furnished nurseries. The *Sorbus Americana*, or, American Mountain Ash, very closely resembles the species just referred to, though the berries are not so bright. It is a very hardy tree, and, in some respects, preferable to the European, which is here found liable to the attack of a grub, at its root, causing the decay of the tree. It grows indigenously in Canada, and the Eastern States, and should be more generally cultivated. It may be grown from seed, or by engrafting on the European, but most persons will find it more easily obtained by purchase.

Tilia.—The *Linden*, or *Lime Tree*, of which there are several varieties, has long been a favourite in Europe, and also in this country, wherever known. It is admirably adapted for street-planting, and many have been set out on the side-walks of our cities. Unfortunately for its reputation, and also for our comfort, it has latterly been the prey of caterpillars, and

"borers," which have greatly disfigured it, and, in some instances, made it necessary to remove the trees altogether. Such, however, has been the result of sheer neglect, in allowing the insects undisputed sway, or, at least, until they had got so firmly lodged, as not to be displaced.

In the country it still retains its health and beauty, and it is to be hoped may ever do so; its absence would be greatly regretted. These remarks apply to the European variety, for the American is, so far as our information extends, free from attack. The Linden has long been a favourite tree for avenues, and public walks; it is planted on the streets of the principal towns in Europe, and frequently forms avenues to country-seats, both on the continent and in Great Britain. The Dutch plant it on the sides of the canals, and the whole country is perfumed by its odour, when in flower.

The Russian peasants manufacture shoes from its bark; cover their cottages with the same, and form the mats, so generally used by gardeners, from the inner bark. It is said that so great has been the havoc for those purposes, that an order has been issued restricting the felling of the trees. The Linden will grow in any soil, but thrives most in deep rich land; in dry sandy soil the growth is slow and the leaves fall early. It is increased by layering—rather a slow process. The trees, both native and European, are obtainable at the nurseries.

ULMUS, *The Elm.*—This is a well known tree, and in England has been famous since the time of the Romans, and of all European trees, is that most generally cultivated. Its culture is easy; its growth rapid; and it will thrive in almost any soil, or situation. The wood of elms, that have been frequently pruned, become knobbed, and when polished is highly ornamental; to obtain it the trees in France are kept lopped and headed down. There are many varieties produced from seed, but the *campestris* or English elm, is most frequently met with in Parks and pleasure grounds. It is of a tall upright habit, attaining the heighth of 60 or 70 feet.

The *Scotch or Wych Elm*, has not so upright a trunk as the English, and it soon divides into long widely spreading, somewhat drooping, branches, forming a large spreading tree, and is of quick growth.

The Dutch corked barked elm (*U. campestris major*) was introduced into England by William III. from Holland, and occasionally reaches the height of 70 feet. The American Elm, *U. americana*, reaches to a great heighth, and in favourable situations displays extraordinary magnificence. It is found widely spread, but in the greatest perfection in the Eastern States, and on the fertile bottoms of the western waters. In New England it is a great favourite, and has been generally planted in the

villages of that thriving section of our country. Many fine specimens exist on the college square in New Haven; and at Hartford are trees of surpassing grandeur. "Penn's treaty with the Indians" on the bank of the Delaware, was held under the shade of an Elm, which but a few years since still lived.—The historical society has erected a marble monument to commemorate the scite.

The Elm is subject to the attack of insects, which greatly mars its beauty, and until some remedy is found, must retard its culture in this section.

VIRGILIA LUTEA, or *yellow wood.*—This is a pretty American tree, but very little known, producing pendulous racemęs of papilionaceous flowers of snowy whiteness. Fine specimens exist at the Landreth Nurseries, from seed collected by that indefatigable botanist, the late Mr. Lyon, who first introduced it into Europe. It grows freely, but succeeds better on a light dry soil.

CHAPTER V.

HARDY EVERGREEN TREES.—This conspicuous and highly ornamental class of vegetables, deserves more particular notice, than the limited pages of this little book admits; a volume of ample size might be occupied with them alone. We have done all that our scheme permitted, and described some of the more desirable; it is hoped with sufficient accuracy to enable the uninformed to make collections suited to their wants, and the extent of their grounds.

The Pine tribe admits of cultivation on nearly all land, though naturally they are found on rocky, gravelly and sandy soils; in a cultivated state, however, we may see them on all descriptions of land, from light sand to that of strong clay, proving them to be of an accommodating habit, and consequently adapted to ornament almost every spot where we may wish to plant. Where there is room for the larger growing kinds, nothing can be planted which will give so marked a character to a residence, especially in the winter, when they contrast more strongly with the denuded forest. To illustrate this, let the reader observe the effect produced on the landscape, where the red cedar has been permitted to stand, either by the road side, or in single trees, scattered over the farm; a practice, by the by, which it is to be regretted, has not been more frequently allowed.

If strict economy be a consideration with the proprietor of an estate, there are evergreen trees which may be obtained in many situations at the cost of labour only; but where the expenditure

of a few dollars is admissible, evergreens of rare and desirable variety may be procured at the Nurseries; and if those of a medium size are purchased, quite a number may be obtained for a very moderate sum; and in a few years, with proper attention, they will have become quite conspicuous objects; a gratification to himself, an ornament to his neighbourhood, and in the eyes of many, of increased value to the farm or residence.

Several of the pine family do not succeed well in the confined and smoky atmosphere of the city; but as room is seldom found in city gardens for large growing trees, it is of the less importance; many of those of dwarf habit thrive admirably, indeed most of them, except those yielding turpentine in excess.

Evergreens are, by many, thought to transplant with greater success in the spring; and on heavy land, we incline to that opinion: but when the soil is light, or well drained by a gravelly sub-stratum, transplanting in the autumn is equally secure. It should be observed, that as evergreens are violently acted on by wind, they require to be securely staked when newly planted.—For full remarks on transplanting, see page 16.

Buxus.—The *Arborescenes*, or *Tree-Box*, both plain-leaved and variegated, are ornamental, and may be clipped to suit the fancy.

Cupressus thuyoides,—the *white cedar*, has been but little cultivated as an ornamental tree; but where the grounds are extensive, deserves a place; it thrives best in damp situations, or on heavy loamy land.

Ilex, *Holly.*—There are several species and varieties of the holly: one of which is indigenous, and forms a beautiful tree, clothed in winter with bright scarlet berries, which contrast cheerfully with its deep green, shining leaves. The familiar robin, and other birds, delight in the berries; and where the trees are planted in view, give a cheerful tone to the winter scene. The European varieties, which are handsomer than our own, do not support the winter of the middle states; south of Virginia they would no doubt thrive, and prove quite an acquisition.

Juniperus Suecia, the *Swedish Juniper*, is a dwarf, conical, rather cylindrical shaped, tree, adapted to small gardens; seldom rising higher than ten feet, unless when of great age, when it occasionally reaches eighteen feet, and, as it supports the confined air of the town, is, on that account, also, desirable.

It is a native of Sweden, Denmark, and Norway, but found in a cultivated state throughout Europe; and the older portions of the United States. The berries are used in the manufacture of gin; and in France for a kind of beer called *genevrette.*

The *I. Virginiana*, or Red Cedar, of our country, is fully

known to all who know any thing of rural life; and, according to Michaux, the author of the "North American Sylva," ought to be known to the citizens of Philadelphia, "where," he says, (with quite as much veracity as some other travellers, who have commented on our social, moral, and political condition,) "the barriers (meaning the curbs) are made of this wood, and are sold at eighty cents each"! As an ornamental tree, it is highly valued in England, and certainly greatly adds to the beauty of the landscape wherever seen. It answers admirably for ornamental hedges, or to screen unsightly objects.

MAGNOLIA GRANDIFLORA.—See page 63.

MESPILUS PYRACANTHA, the *Evergreen Thorn*, is chiefly admired for the beauty of its numerous clusters of red berries, which contrasting with its green leaves at the most gloomy season of the year, make it extremely ornamental in a lawn or in front of a house. It is a native of the south of Europe; the flower is white, slightly tinged with rose colour. It is propagated by seeds, grafts, and layers. There are two other varieties, the double, and the rose-coloured, which are more rare. It is also used for ornamental hedges; the deep green foliage, and scarlet berries producing, during winter, a pleasing effect; it is rather tender in the climate of Philadelphia, unless the soil be dry.

PINUS.—Under the general head of *Pine*, as being more popularly known, we shall include the White, or Silver Pine; the Balm of Gilead Fir; the Hemlock Spruce; the Black, White, and Red Spruce; Silver Fir; Scotch Fir; and Norway Fir.

The White Pine (*P. Strobus*), is both highly useful and ornamental, and is found on elevated land from Canada to Virginia. It sometimes reaches the height of 180 feet, and 6 or 7 feet in diameter. The wood is remarkably white—hence called white pine by lumber-men.

When young, and for the first thirty or forty years, it is pleasing, but as it advances in life the branches become ridged, and easily broken by sleet and snow.

The Scotch Fir or Pine, *P. sylvestris*,

> "That prince, of mountain race,
> The fir, the Scotch fir, never out of place."
>
> CHURCHILL.

is of all pines, probably the one most known in Europe. It has been cultivated to a vast extent in the mountainous regions of Scotland, where plantations were commenced about the end of the seventeenth century. The Rothiemurchus Forest, which covered sixteen square miles, for many years made large returns

to its owner, the annual profit being, sometimes, $100,000 per annum.

The tree is strong, hardy, vigorous, and though not so ornamental as some other pines, fully merits a share of notice. There are some good specimens at McMahon's Nursery.

The Norway Fir (*Abies excelsa*), is the loftiest of European trees. Its widely extended branches spread out on every side, so as to form a cone-like or pyramidal shape, terminating in an arrow-like leading shoot. The branches, in young trees, are dispersed in regular whorls, from the base to the summit, and are nearly horizontal; but when old droop gradually at the extremities. On the whole it is a most desirable evergreen tree, and no lawn of sufficient extent should be without it. A noble specimen may be seen at Bartram's.

The black, red, and white, spruce firs (*A. nigra*, *rubra*, and *alba*), are quite ornamental, the latter particularly so.

The Hemlock Spruce, *A. Canadensis*, is an elegant tree, from the symmetrical disposition of the branches, which droop gracefully at their extremities, and also from its light and tufted foliage. As it advances in age, the limbs become brittle, and readily broken by heavy snows; but it is not liable to that disaster until 30 or 40 years old. The Hemlock Spruce bears the shears well, and forms a handsome inside hedge.

The Silver Fir, *Picea pectinata*, or comb-like leaved silver fir, has been termed the noblest tree of its genus, rising to an elevation of 180 feet, with an erect stem, regularly furnished with whorls of candelabrum-like branches. The leaves are of a dark green on the upper surface, and silvery beneath; hence its common name. The cones are large, and have a fine appearance, both before and after they are mature. It is indigenous to the mountains of central Europe, and the west and north of Asia; and is found in France, Italy, Greece, and south of Germany. The finest specimens in the neighbourhood of Philadelphia are at Landreth's, (south 5th street,) imported many years since, and now 40 feet high, and regularly formed. It likes a deep rich loam, not too moist.

The Balm of Gilead Fir, *Picea balsamea*, or American silver fir, is a pyramidal tree, in general appearance resembling the European silver fir; when standing alone it forms a symmetrical tree, abundantly furnished with leaves, and is certainly a beautiful object when young; but it declines in old age, and from the brittle nature of the wood frequently exhibits a branchless, mutilated trunk. The true silver fir, on the contrary, retains its elasticity, and is magnificent when old.

Rhododendron—This is one of the most showy and beautiful shrubs produced in our gardens, and as such deserve assiduous care:

they require peculiar treatment, in order to have them in any perfection. They succeed best when planted under a north wall; for if exposed to the full blaze of a spring or summer sun, the leaves will become brown and sickly, and in the summer the plant will perish from drought, no supply of water being adequate to their wants in such a situation. They must be planted in pure peat or heath-mould, for they will not thrive in garden-mould, or loam, though a small portion of the former may be added to the peat or heath.

If planted in an open or exposed situation, it will be requisite to water them frequently, or their flower-buds will wither without expanding. They are propagated by layers, by seed, or by cuttings; but most easily by the two former. Great care is required to raise the plants from seeds, which must be sown very early in the spring in pots, in a sandy soil, and but sparingly watered. When six weeks old they may be potted out singly, but they require all this time artificial heat. Cuttings of young wood will strike under hand-glasses, if the air is excluded by pressing down the glass.

The *Rhododendron maximum*, or Mountain Laurel, is the ornament of our mountain passes; it thrives well in a cultivated state, when planted in a damp shady spot, in soil composed of light wood-earth and loam: and is, from the fact of its delighting in shade, particularly valuable in cities, where the sun does not always reach the gardens.

Taxus baccata, *The Yew*, is an invariable appendage to an English church-yard; but the custom for thus planting them has never been satisfactorily explained. Some have supposed they were placed there to afford branches on Palm Sunday: others that they were emblematical of silence and death.

> "Beneath those rugged elms, that yew tree's shade,
> Where heaves the turf in many a mould'ring heap,
> Each in his narrow cell securely laid,
> The rude forefathers of the hamlet sleep."
>
> *Gray.*

They now, however, form the most ancient and venerable trees in Britain; some are supposed to be upwards of 1000 years old. One near Staines, known as the Ankerwyke yew, tradition says, was made by Henry VIII. the place of meeting Anna Boleyn, while she was living at Staines. The use of the yew in ancient gardening, during the 17th century, was very general. It was the practice at that time to clip it into all sorts of fantastical shapes; in modern gardening it is principally valued for single trees, and small groups in particular situations. It will grow in any soil, and thrive under the shade and drip of trees.

Thuja. *The Arborvitæ.*—The T. occidentalis, or American

arborvitæ, is a slender tree, sometimes rising in its natural situation to the heighth of 40 or 50 feet. Its form is spiral, and when in contrast with trees of other habit, quite agreeable. It bears the shears well, and if grown as a hedge or screen, may be clipped to the taste of the cultivator. A cool soil is best suited to it, though fine plants may be found in a cultivated state, on light sandy land.

The Chinese variety, *T. orientalis*, is not very unlike the American, but may be distinguished from it by the leaves or scales being smaller, closer together, and of a lighter or yellowish green. This variety is also adapted for hedges, but is not as good-looking when old; single plants, neatly sheared, have a pleasing appearance.

CHAPTER VI.

HARDY VINES AND CREEPERS.—The principal consideration in the selection of vines, is to procure such as are adapted to the particular purpose the planter may have in view; if to cover a wall of considerable height, it will be necessary to obtain those which adhere by means of radicals; but if the space to be covered admits of support being rendered, there will be a larger number from which to choose, as it is unimportant whether they have or have not radicals. Vines are usually planted for covering dead walls, screening unsightly objects, training on upright stakes against fences, &c. The variety described herein, may enable the amateur to make a judicious selection, or if he prefer running roses for certain spots, he will find such under their proper head. The management of vines is not unlike that directed for shrubs; the soil they mostly admire is light rich loam. If they are planted and trained as ornaments of the garden, care should be taken to remove all dead branches, and shorten from time to time, especially early in the spring, the long slender shoots, which will strengthen the vine, and promote bloom.

AMPELOPSIS QUINQUEFOLIA, or *Virginia five-leaved Ivy*, is of rapid growth, adheres firmly to walls, and in autumn the foliage assumes a red and purple hue.

ARISTOLOCHIA SIPHO; *Birthwort*, or *Dutch Pipe;* so called from the peculiar shape of the flowers. The leaves are large, not unlike the fox grape; and the plant is of strong growth; requires training and support.

BIGNONIA, *Trumpet Flower.*—The *radicans* or common, is an extremely hardy robust vine; clings to walls, trees, or any thing that affords support; and produces clusters of dull red flowers.

The *B. grandiflora* resembles the former in some particulars, but is far more desirable. Its showy flowers are borne in large racemes, which gradually expand, and thus continue many weeks in bloom. It is from China, but quite hardy with a southern exposure, in the climate of Philadelphia. A fine specimen 30 feet high, is at Landreth's. The *B. crucigera*, is a strong vine, and adheres to walls; flowers of a deep orange colour.

CELASTRUS SCANDANS, or *Staff-Tree*, is covered in autumn with clusters of bright red berries—requires support.

CLEMATIS, or *Virgin's Bower*, is a most beautiful climbing plant; its fragrance gains it general favour. It is hardy, bearing a white blossom nearly all the summer. Another variety bears a bluish purple flower, succeeded by handsome red berries: this is prettier than the first, but wants its fragrance. They are easily propagated by layers, from seeds, or by parting the roots;—requires support.

GELSEMIUM NITIDUM, *Carolina Jasmine*, is a native vine, yielding a profusion of yellow flowers of delicious perfume. It requires a warm situation in the middle states. The best position is against a wall with southern exposure — requires support.

HEDERA HELIX, *Ivy*. See p. 73.

JASMINUM OFFICINALE, *common hardy Jasmine*, is a native of Malabar—it will grow in any soil, and when trained against a wall or house, will attain a great height. The blossoms are white and pretty: the scent is delightful. Care must be taken with this and similar plants, such as Clematis, &c., to prevent their running wild, or by the other extreme of cutting them too close in the summer, which prevents their bearing many flowers. It is recommended that they should be freely pruned in the winter, but should not be deprived of their lateral shoots in the summer, as it is from the extremities of these that the greater part of the flowers are produced. Instead of cutting them off, the larger ones should be fastened to the wall, and the smaller ones allowed to protrude: thus the flowers will be shown to advantage. The young laterals may be pruned down to short spurs in the winter, and these will shoot out fresh laterals in the spring; thus producing a good supply of flowers at their points. This system of spurring the young shoots in winter, and allowing them to take their own course in the summer, (unless they become too straggling,) is all the care they require, as soil and situation are of but little importance. They like protection from very cold winds, and a good share of sun to bring forward their flowers: they are propagated by suckers. The yellow Jasmine is cultivated in a similar manner; but it does not grow so high or rapidly, consequently requires less pruning;—all require support.

LONICERA, *Honeysuckle*, is a climbing shrub, found in all parts of Europe. It grows well against walls, or the sides of bowers: it may be trained up trellis work; or if planted at the foot of a tree, may be supported by it, and adds at once grace and fragrance to the bower or porch. There are five or six kinds of this plant besides the belgica, the one above. The *Red-berried* is a native of Switzerland, and does not exceed four feet in height. The *Trumpet*, from North America, is very handsome. The *L. flexuosa* is perhaps the most desirable variety of this tribe; its flowers and foliage are alike beautiful, while its incessant bloom and pleasant perfume increases its value. The Honeysuckle is propagated by layers, or by cuttings, put in either in the spring or autumn.

VINCA, *Periwinkle*, the large, a trailing plant, looks well at the bottom of a trellis, up which higher climbers grow. It bears a pretty blue flower during the whole of summer, and propagates itself plentifully by its suckers. It likes the shade, and will therefore grow at the bottom of trees, and among rock-work.

WISTARIA, *Glycine*, named in honour of the late Dr. Caspar Wistar, of Philadelphia. The common Glycine, *W. frutescens*, is well known, and desirable on account of its fine purple flowers. The *W. consequena*, *sinensis*, or *chinensis*, by each of which names it is occasionally specified, is unquestionably one of the most lovely and ornamental plants that can be obtained for training against a wall; but as the flowers begin to expand very early in the spring, they require to be slightly protected, or they are liable to be injured by the spring frosts. If it be placed against a south wall, not much exposed to wind, it will stand the winter perfectly well.

The flowers are larger than those of *W. frutescens*; disposed in longer and looser racemes, and are somewhat paler in colour. In established plants, they are produced in great abundance. It has been pronounced the most magnificent of hardy deciduous climbers. It may be made to flower frequently during summer, by stripping off the leaves, and cutting off all young and superfluous shoots, which have been formed to within a few eyes of the stem, which causes it to throw out fresh leaves and flowers. When the bloom thus induced is over, the same process may be repeated, and thus an abundant succession of flowers may be insured throughout the season. These remarks do not apply to young plants.—It requires support.

CHAPTER VII.

HARDY HERBACEOUS, BULBOUS AND TUBEROUS-ROOTED PLANTS.—The ornaments of the garden usually classed under these heads, are multitudinous; and when united with those termed annuals, in many cases where the grounds are of very limited extent, form the principal decoration. In all gardens, however large, they are important, the more so from their variety, the different periods of bloom, and their hardy nature, and consequently little care demanded by them. Plants of this character usually occupy (except it be some of the tall growing ones) the space in front of the shrubbery, and next adjoining the walks; and if planted with due regard to their relative height, so as to bring the dwarfest nearest the eye, and the tallest gradually receding, a more agreeable effect is produced.

They should also be planted with sufficient space between each specimen, especially those in front, to admit groups of annual flowers, many of which are of vivid colour, and others as the *mignonetto*, highly odoriferous; of which a few seeds should be scattered in every niche which may be found vacant. *Hyacinths*, *Tulips*, *Narcissus* and *Crocus*, may also be interspersed in clumps with good effect. In the autumn when vegetation has ceased, it will be found of advantage to place a stick firmly fixed in the earth, beside each plant or bulb, to mark the spot it occupies, else when digging in the spring they will be liable to injury. If the soil is heavy, and consequently strongly acted on by frost, benefit will be found in spreading a coat of long manure over the surface, to protect the more delicate ones from being drawn; the manure may be dug in the spring, and thus effect a double purpose.

ACONITE, or *Monkshood*.—There are several varieties of this plant; the most common is deep blue, and its flowers resemble a hood. It is extremely poisonous in all its parts; even its smell is said to be injurious. It is hardy, and looks well in borders. It is propagated by parting the roots in the autumn.

THE WINTER ACONITE (*Eranthis hyemalis*,) is one of our earliest flowering plants, producing its little yellow flowers as early as February, or even January. It is a tuberous root, and looks well in small clumps, alternating with the snow-drop, as it blossoms at the same time. The roots should be taken up when the leaves and flowers are faded, not sooner, or its tubes will be injured; but it must not be kept long out of the ground, or the tubers will perish. It is propagated by dividing the roots when planted.

ALTHE SINENSIS, *the Hollyhock*, likes good rich soil, and grows to the height of ten or twelve feet. The *Chinese* is a hardy pe-

rennial, from China; both sorts are propagated by seeds sown in the open ground, in spring or autum. After they come up, they may be transplanted into a permanent situation: they flower the second year. The common may be increased by dividing the roots.

THE ANEMONE, or *Wind-flower*, a hardy tuberous-rooted plant from the Levant. There are two sorts, the single and double. The tubers should be planted about the month of October, reserving a few to plant early in February, or late in January, if it be mild and dry. By this means a succession of flowers will be obtained. A rich loamy soil, with a slight mixture of well-rotted dung, is best fitted for them. They should be planted in narrow beds, about three or four feet wide, finished a little rounding, with a smooth even surface. The beds should be formed by trenching, and laying in, about eight inches from the surface, a substratum of strong loam, and on this a surface layer of lighter earth to receive the tubers. These beds may be prepared in September, though they do not receive the roots till the following month. The tubers should be six inches apart each way, a shallow drill be drawn along the bed, and the roots be pressed down into it, and then covered with about two inches of soil. The tubers best adapted for planting are those of the middle size, as they will flower best; care must be taken to keep the eye of the root uppermost, to ensure their flowering well. If the weather should prove very severe, some slight protection may be afforded to those planted in the autumn, by laying a little straw or litter on the beds, always withdrawing it when the weather is favourable, and fully exposing them to light and air. When they appear above ground, the earth should be firmly pressed about each plant. When the flowers expand, they will keep in bloom a much greater length of time, if some thin light shade is placed over them during the heat of the day. The tubers should be taken up as soon as the leaves decay, which may be expedited by sheltering them with canvass or mats in very wet weather. When the tubers are taken up, they should be carefully dried, all the soil removed from them with great care, and be stored in dry bags or boxes. The young offsets should not be detached till about a month after, or they are liable to shrivel; if, on the other hand, they are left on till the roots are again planted, they are apt to rot.

When the young offsets are planted in October, they will frequently flower the ensuing year. If the Anemone be propagated by seed, it must be sown as soon as ripe, in pots or boxes, in a loamy soil, covered very thinly with light earth. They must be slightly protected during the winter, and in the spring the pots be plunged their whole depth in the soil, and the plants watered when requisite. When the leaves begin to wither, gradually

cease watering; and when the leaves are decayed, take up the tubers and treat them like the old ones.

The single and half double Anemones are, in some instances, little less prized than the double ones; and even the commonest ones, when planted in groups, make a brilliant appearance, more particularly when they are brought to blow in the winter, or early in the spring, when other flowers are scarce.

A. HEPATICA, is a native of the mountainous parts of Switzerland and Sweden; consequently quite hardy. It is a species of the Anemone, or wind-flower: its beautiful pinkish or white blossoms appear before the leaves, in the spring, almost as early as the Snow-drop. They thrive best in a strong loamy soil, with an eastern aspect; but above all require pure air. They are not of very easy cultivation; but they may be raised either from seed, or by dividing the roots. The seed must be sown in pots in the beginning of August, and treated as Auriculas, which see. Plant out the seedlings in the succeeding August. There are two sorts, the double and single; the former flowers a week or two later than the single ones, and keeps longer in flower. They may have their roots parted in March, while in flower, and be immediately planted in clumps, and not be disturbed again for three or four years, otherwise they will not flower, as their buds are formed in spring before they blow; and after being taken up they are always weakened, sometimes die, and seldom blow well till the third year.

AMARYLLIS, the *A. formossissima*, or *Jacobean lily*, — produces rich crimson flowers of the texture of silk velvet. Plant in April, in good ground, and remove before frost to a dry, warm place. A. *longifolia* is quite hardy, requires strong soil, and an airy exposure.

ANTIRRHINUM (or *Snap Dragon*).—A perennial plant, which will grow on the tops of old buildings, old walls, or on heaps of old dry rubbish. Some of the varieties, of late introduction, are very pretty, and fully merit a choice position in the garden.

AGROSTEMMA (*the Rose Campion*), blows a red flower from June to September. It likes a warm, dryish soil; should be propagated first, by sowing the seed, when ripe, in light earth, and planting out in the spring—afterwards, it will sow itself.

AQUILEGIA (*Columbine*).—A perennial and indigenous plant; it grows two or three feet high, and is much given to sport its colours, as well as to the doubling of its flowers; the same seed producing varieties of white, blue, red, and often mottled. It is best raised from seed, and where it has been once grown it will abundantly sow itself, and the scattered plants may be taken up and replanted. They will commonly blow the second year.

BELLIS (*the Daisy*), is indigenous to England: it is a pretty,

simple flower, and looks well in small clumps in the front of the border. It is sometimes used for an edging; it should be parted every year to prevent its degenerating, which it will do speedily. There are more than half-a-dozen varieties of this modest and pleasing flower. Seed may be saved from the double varieties, and sown in the spring like other hardy perennials; but the common method of propagation is by dividing the plants in autumn, or in spring, or both, which is indispensable; for like all spreading plants they greatly deteriorate the soil, and ought not to stand more than one year in the same spot. Daisies have been very properly recommended for rock-work and baskets, training Petunia, &c., over the handles.

CAMPANULA PYRAMIDALIS.—A beautiful perennial plant from Savoy. It grows about four feet high, and the top of the stalk supports a pyramid of delicate blue flowers. The seed comes up readily, if sown in the spring, under a hand-glass, not being covered too deeply with earth. In the fall plant in a nursery bed; and in the spring plant in the flower borders; but perhaps it may not blow till the following year. It may be propagated by parting the roots, but the plants decline by this method. It is not particular as to soil; but a light sandy one suits it best.

The *C. persicifolia*, or the Paper Bell-flower, is perfectly hardy, standing the severest winter. It is grown both in pots and in the open ground. There are varieties, both of a pale delicate blue, and of a pure white; and both of these occur double as well as single. They run tall, and produce abundance of flowers from June till September. The best time to divide the roots is after it has done flowering in autumn, though, if neglected then, it may be done in the spring. Like the other Campanulas it prefers a light sandy soil, and requires full exposure to the sun's rays. A rich soil causes the plant to rot.

The variety of Campanula called *Canterbury Bell*, is a biennial, and should be sown every spring to form a succession. It may be planted out till November.

CAMELINA CŒLESTUS.—This plant was long cultivated as a stove plant before it was considered sufficiently hardy to grow in the open ground; but it is now found to be equally hardy with the Dahlia. The root consists of a bundle of from six to ten fleshy long tubers, somewhat similar to the Dahlia root; the tubers, however, not being thicker than a goose-quill. From these, in the spring, there shoots up lanceolate leaves, and a flowering stem, rising from two or three to twelve or eighteen inches high. The flowers are beautifully blue, and succeed each other daily from the beginning of May till the end of September, producing abundance of seed. They are propagated by dividing the roots, like Dahlias, or by the seed, which may be sown on a moderate hot-bed, with the other annuals, about the

middle of February, or in the open ground in the beginning of April. They require a moderately rich and light garden mould; the seed must be covered about half an inch with light sandy earth. If the weather is mild the plants will appear in about a fortnight, and will only require to be watered when the weather is dry. They may be removed either into pots, or be put in clumps, or separately, in the flower bed: by the beginning of July they will blossom. Those raised from the tubers will flower earlier. When left in the earth through the winter, it will be necessary to cover the roots with a few inches of sand or ashes; but they may be taken up and preserved in sand, like as Dahlias: which see.

CHEIRANTHUS (*Stock-jilly flower*).—There are two biennial kinds, the *Brompton* and *Queen's*, which require to be sown in the spring, and will stand our winter, protected by a cold-frame, or by an inverted box, or keg, partially filled with leaves or straw, flowering the succeeding summer; and there are three annuals, the *Ten Week*, bearing double as well as single flowers, all the summer, generally forwarded in a frame, or may be sown in April, in a pot, and brought into the house till fit to plant out, or in a south border: it is very fragrant, and a general favourite, of various colours, red, purple, and white. There are also the Wall-flower leaved, and the *Indian*, treated in the same manner.

The Wall-flower.—A very sweet-smelling and early-flowering biennial, both single and double flowered. The former grows well on old walls, or any brick and lime rubbish. The double is not very hardy, as it requires protection during severe frosts, as recommended for the stock-jilly; it grows well in pots, and is propagated by cuttings. The seed of the single Wall-flower will grow readily.

CHRYSANTHEMUM SINENSE, is an interesting plant, as one of the last to blow, being in perfection in November and December. It is much attended to at present, and is found of various colours, from pure white to dark chocolate; a few of each, neatly trained in pots, will, if removed to the house in October, or on the approach of severe frost, continue to give pleasure after all out-door flowers have ceased to bloom. It is easily propagated, either by cuttings, or by dividing the roots. There is an annual bearing this name, a variety of the Corn Marygold, which is propagated by seed.

COLCHICUM AUTUMNALE, *Autumnal Crocus*, produces flowers in autumn, not unlike the *Vernal Crocus*.

CROCUS VERNUS, *Spring Crocus*, one of the most pleasing, because one of the earliest flowering bulbs. There are several varieties, and when judiciously mixed, and planted in rows, or

clumps, they have a brilliant appearance, especially when the sun shines: they make a very pleasing show when planted in a row near the edge of the border. They may be taken up annually, but not kept out till they commence growing. When they are out of flower their grass or leaves may be tied in knots, but not cut off till withered, or it will injure the bulb. They thrive best when they are only taken up once in three years, when abundance of off-sets will be found, and which are the means of their propagation. The Crocus should be planted about two inches deep in the ground. Their colours are yellow, purple, and striped: they sometimes blossom as early as Jan'y. The corms of the various sorts of Crocuses must be planted with a trowel, at the depth of about two inches, allowing six inches from plant to plant; or in patches, of five or six each, in fronts of clumps or borders, putting them in late in the autumn. There are upwards of twenty named varieties; the blue and small yellow are the least esteemed: the large yellow, cloth of gold, Scotch, white, and purple, are next, and the saffron the next in value.

Convallaria, *the Lily of the Valley*, is a perennial, of small height, but of great beauty and fragrance. It likes a shady spot, and is propagated by dividing the roots early in the spring.

Dianthus (*the Pink*).—These beautiful flowers very much resemble the Carnation. They are sometimes raised from seed; the usual method of propagation is by pipings. When layering is practised, use the method recommended under the head "Carnation." The time to pipe pinks is during the bloom, when the new shoots, which must be employed, are of sufficient length for that purpose. The cuttings to be piped must be shoots without flower-buds, having two complete joints, being cut off horizontally with a sharp knife close under the second joint. The leaves also must be trimmed off from the joint which is to be inserted in the soil. When the pipings are prepared, throw them into a basin of soft water. The place for their reception ought to be a slight hot-bed; but a good border, having a western aspect, and a light mould finely sifted, and moderately moistened, will succeed very well. A hand-glass to cover the pipings will be indispensable. The dimensions of the glass having been marked on the spot, take the pipings one by one out of the water, and in this wet state press them, with a steady hand, into the earth, about half an inch deep, just to cover the joint, and no more. Plant them about half an inch apart. If any water is given, it must be very little, with a very fine rose water-pot, or the earth will be unsettled from the bottom of the pipings. When the leaves are quite dry, place the hand-glass over them forcing the edges a little way into the earth to keep out the air

They must afterwards be kept regularly moist, with soft or wellsunned water, but not made too wet, and the leaves must be allowed to dry before replacing the glass, or they will rot. If the sun is very strong, water the *outside* of the glass early in the morning, and cover it with matting during the heat of the day, leaving only a glimmering of light. The glasses should not be lifted for the first fortnight, after which it will be proper to take up the glasses occasionally, to admit air and light, in the morning for about half an hour; and if any of the pipings are mouldy, throw them out. Turn the glasses upside down while off, to dry them, but do not expose the pipings to the strong glare of the sun. As soon as they begin to grow, place the glasses more lightly over them, and open them more frequently, and for a longer time. When they all appear well rooted, the glass will be no longer necessary. Any that may be more forward than the rest, may be removed and potted out first, leaving the others the protection of the glass till they are sufficiently advanced. When they have all struck root, they may be transplanted into a bed of common garden mould—rather loose and sandy is better than a heavy soil. Pinks are very hardy, and require little or no protection during winter. Keep the beds free from weeds; and if the roots are loosened by the frosts, press the soil firmly round them in the spring. When blooming, manage like Carnation.

Dahlias are at present much esteemed; they are tubers, and received their name from Dahl, a Swedish botanist. They are natives of Mexico, growing on the high sandy plains: the soil for their culture should, therefore, be rather light. It is impossible to describe the general appearance of the Dahlia, as its varieties are almost endless, from its extensive cultivation. There are said to be upwards of a thousand named flowers; judges distinguish them by three criteria, form, colour, and size. In the first place the flower, on a front view, should be perfectly circular; the eye or disk of the full-blown flower should be hid by the central petals, arranging themselves into a fine crown, and the side view should present a perfect hemisphere, or resemble the upper half of an orange. The colour when self, or of single shade, should be bright and distinct; when variegated the marking should be clear and regular, whether stripes, shadings, edgings, or motlings, without clouding or running. The size is less attended to than the form, as the best formed flower will be more highly estimated than the largest. Dahlias also should show a disposition to bloom freely, and have shortish flower-stalks, on which the blossom should stand boldly and well exposed to view. They are propagated either by seeds, cuttings, or dividing the roots. The former method is resorted to only by Florists and others, who wish to produce new sorts; and we shall no farther revert to

it than to say, the method is similar to that pursued in raising the seeds of other half-hardy tuberous roots. The most simple method, and that generally resorted to, is dividing the roots at the time of their re-planting in the spring. Those who possess the advantages of a hot-bed and frame, place the old roots which have been carefully preserved from damp or frost, into the hot-bed about the middle of February, covering the roots but not the crown (that is the part of the root immediately round the stalk,) with some light soil mixed with sand, and covering them with the frame, sprinkling them occasionally with warm water; if the frame steam too much, air must be occasionally admitted. When the the roots have made shoots of two or three inches high, these may be separated, seeing that each shoot retains a tuber, or at least part of the crown; these must be potted in small pots, using a compost of one-third sandy loam, or common garden mould, one-third leaf mould, and one-third white sand or road scrapings. These cuttings must still be kept under the frame till they are re-established, shifting the pots, if the roots grow too large: gradually inure them to the open air, and by the middle or end of May they may be planted in the open ground. Those who have not a hot-bed may plant them in a warm border in the middle of April, protecting them at night, should any frost occur. They should be planted in a light loose soil, the crowns being buried about an inch below the surface. When the shoots are about three inches above the soil, the roots are to be taken up and separated, as those we have just described in the hot-bed; only the pieces may be at once planted in the border where they are designed to stand, protecting from frost should any occur. Propagating by cuttings is the best though not the safest method. As soon as the shoots have attained the height of two inches above the ground, the soil should be carefully removed down to the crown of the roots, and the young shoots taken off with a knife, along with a small portion of the crown of the plant when possible; but they will generally grow without. They should then be potted as before described, and taken to the window of a dwelling-room, or placed in the frame; and when sufficiently established, removed to the open border. Under all these processes the young plants will require to be protected from the glare of the sun, and to be watered when first planted, and as often as requisite afterwards.

There is an almost endless variety of colour among these plants; and their height also varies from seven or eight feet to two or three: care must therefore be taken in putting them out where a great number is grown, to arrange them accordingly. When they have attained a good footing in the earth, they should be protected from the effects of winds by firm stakes: some employ only one large stake, which should be as high as the plant

will grow, and it will then be requisite to prune off all the side branches, preserving only the main stem, with a bushy head; by which means large and fine flowers are to be expected: others prefer three stakes, placing them in an angle, one on the south-east, and another on the north-west side, in which direction the strongest winds occur. The stake must be driven deep into the ground, and the branches of the plant supported to or round them by pieces of bass: some surround the plant by hoops made fast to three stakes, and this method looks neat and pretty. Whatever plan is adopted, one thing is certain, the Dahlia must be well supported, or it will be torn down by the autumnal winds, just as it promises to reward all your care by exhibiting its beautiful flowers. The stakes must be placed in early, before the new tubers are formed, which would otherwise be liable to damage, and they should be placed as near the main stem as convenient. As the plants grow, the redundant shoots should be pruned away before they grow any size, the amount of pruning being regulated by the wish of the person, as to whether he requires a great number, or prefers fine and large flowers.

Immediately that the first frost has touched the leaves, or the flowers have ceased to be good, cut down the stem of the plant to within a few inches of the ground, cover the roots carefully with straw, ashes, pea-straw, or any similar thing, and let them stand till near the end of November, to mature their tubers and gain their strength. Choose, if possible, dry weather to take up the roots, stand them separately in a sheltered place, and dry them gradually; then keep them carefully from frost, damp, or, heat: the two first would cause them to rot, the latter to shrivel up.

The following are some of the most esteemed varieties. Those marked * are American seedlings, raised by Mr. Schmitz of Philadelphia, one of the most successful and enthusiastic cultivators of this beautiful plant.

Alexander—orange	height	5 ft.
America—fine purple	"	5
Argo—bright yellow	"	6
* Beauty of Philadelphia—yellow tipt with rose	"	5
Beauty of England—white edged with crimson	"	4
Blandina—delicate white	"	5
Bride—blush tipped with rose	"	4
Cleopatra—fine white	"	4
Coronation—crimson shaded with purple	"	5
* Colombus—rosy crimson	"	5
Duke of Richmond—bronzy pink	"	5
Duchess of Richmond—orange and pink	"	5
Elizabeth—white with purple edges	"	4

Emperor of China—rich purple	height	6 ft.
Fisherton Champion—crimson, fine.....	"	6
Gem—white edged with crimson.....	"	5
Grace Darling—rosy salmon.....	"	5
Lady Glentworth—claret	"	4
Maria—dark rose, fine form	"	5
* Mary Ann—white, large perfect flower.....	"	5
Marshal Soult—red and lilac	"	4
Madam de Schauenfield—bright vermilion...	"	5
Miss Percival—pure white.....	"	5
Mrs. Rushton—white edged with lilac	"	6
* Philadelphia—white spotted with purple....	"	5
Princess Royal—pale amber edged with pink	"	4
President of the West—dark crimson	"	5
Rainbow—yellow edged with purple.....	"	5
Scarlet Defiance—fine bright scarlet.....	"	5
Suffolk Hero—dark maroon	"	5
* T. C. Percival—dark crimson, fine flower...	"	4
Unique—yellow edged with red.....	"	4
* Washington Irving—light purple.....	"	5
* Yellow Victory—brimstone yellow	"	4
York and Lancaster—rose pink	"	5

DIGITALIS, *Foxglove.*—The common is an English plant, growing nearly three feet high, bearing a variegated peach-coloured blossom from June to September; another kind blossoms white. The yellow, *Lutea*, is a native of Italy, propagated by seed, which sows itself, and blows in June and July: the large yellow blossoms at the same time, and has a hue of purple in the blossoms. It will attain to the height of three feet. All these require the same treatment as the Campanula, which they resemble in their habits.

FRITELLARIA IMPERIALIS, or *Crown Imperial.*—A large bulbous root of a most nauseous smell. It is a native of Persia, and rises to the height of nearly three feet, bearing a bunch of yellowish red flowers, turning downwards, and part of the foliage rising above them. One variety is a pure light yellow; it is of a very graceful shape, and blossoms early in May, or sometimes in April: it is propagated by parting the off-sets when the leaves have faded off in July. This may be done once in three years, and the bulb be put in again in August, as it must not be kept out too long, it not being protected by a skin like the Tulip, &c. The bulb must be planted about the depth of four inches in a sandy loamy soil, or at least a garden mould which is not too stiff or too rich, to remedy which a little sand may be mixed with the mould.

FERRARIA UNDULATA—A bulbous root, bearing a singular par-

ty-coloured flower, with waved edges, somewhat resembling the Tiger Lily; the flowers expand in the morning and close in the afternoon. It is propagated by off-sets, separated when the plant is withered, and re-planted immediately.

Fraxinella, or *White Ditany*—is a native of the south of France. It grows about two feet high, producing in June or July a white or purple flower. It likes a rich soil, but does not flower well till the fifth year after its sowing; after which its flowers are abundant and handsome, with a most delightful perfume. The whole plant is very elegant, its flowers abundant, and its leaves rich in colour and odour. It is an old favourite border flower. When propagated by seed it must be sown in September, either in the open ground, or in pans or boxes, in a rich, light, and well-pulverized soil, and covered to the depth of an inch. When the young plants come up they must be covered with long dung, or dry litter, during inclement weather, uncovering them during the day, when the weather is favourable. When they are uncovered in the spring, keep them clear of weeds, and water them as required; by the end of March let them be removed to where they are intended to flower, keeping the roots well earthed up and watered when needful. They may be propagated by dividing the roots when strong enough, but it must be done carefully. When the plant dies down in winter, it must be covered with leaves, dry litter, or straw, for protection.

Fumaria, *Fumatory.*—There are two kinds of plant bearing this name; the bulbous, growing five or six inches high, producing a purplish flower in the spring, which is propagated either by separating the roots in autumn, or by sowing the seed in a warm situation; and the yellow idigenous, from the mountainous parts of England, which produces its yellow flowers both in April and November, and is propagated by dividing the roots.

Galanthus, *Snow Drop.*—A pretty native bulbous plant, blowing in the earliest spring: it is a delicate white, and often is seen peeping above the snow.

Gladiolus, or *Corn Flag.*—It is a bulbous root, propagated by off-sets. It may be left in the ground for two or three years, when it should be taken up and replanted. It is a native of the south of France, growing to the height of two feet. It flowers in June and July, bearing a red flower inclining to purple. There is a larger, called the superb, the flowers of which are of a bright scarlet, with large white spots on its lower petals; it will attain to three feet in height, and flowers in July and August. There is another handsome variety, called the *psittacina* which is very handsome, and an abundant flowerer.—It is planted on the open border in April or May, and removed to a dry warm place in October.

Hesperis, *the Rocket.*—A pretty fragrant plant, nearly two

feet high. It blooms all the summer, either red, purple, or white, and is propagated by parting the roots in autumn.

HEDYSARUM, or *French Honeysuckle.*—A native of Spain and the south of France, is a biennial, rising about two feet high, bearing a very pretty red flower in July and August. It is propagated by sowing the seeds in the spring, and transplanting them where they are to grow in the autumn. They blossom the second year.

HYACINTH,—is a native of the East. The varieties amount to some thousands; and fine ones have been sold as high as two or three hundred guineas for a single bulb. It is a florist's flower, one of our earliest flowering bulbs, and makes a very pretty appearance in the parlour window, when blown, in flower-glasses: for the method of doing this, see *bulbs in glasses*, p. 19. New varieties are raised from seed. The best time of sowing is in the autumn, but not later than the first week in October: it may be sown in the open border if the soil is rich, light, and dry; but it is better to sow in pans or boxes, which can be conveniently shifted according to circumstances. The vessels in which they are sown must have a good drainage of broken potsherds at the bottom, and be filled rather above the brim with rich light soil, laid very smoothly. The seeds must be scattered thinly and evenly, and covered lightly not more than half an inch at most. The boxes or pans must be plunged up to the brims in a dry spot of ground, and there remain till the severe weather begins, when they must be removed under shelter, or be protected with dry litter, exposing them to air and light whenever the weather is mild, and not too wet. When the seed-leaves appear above ground, in the spring, they are very small: keep them free from weeds; and if any green moss appear on the surface of the earth, sift a little fine mould or sand over it. When the leaves die off about midsummer, an additional covering of this kind must be given to the whole. Precisely the same management must be pursued during the second year, till the leaves die down, when the young bulbs may be taken up; but must be re-planted by the end of August, or they may dry and shrivel. They should be re-set in drills about three or four inches apart, and two inches deep, covered with a layer of sand of about a quarter of an inch thick. Some of the strongest bulbs will probably flower the third year; but the whole will not flower before the fifth year. The bulbs which are four or five years old from their first flowering, are in their greatest perfection: after this they gradually decline. When a good bulb has been wounded, the part should be pared with a sharp knife, and then left some days to dry before planting, or the whole root may canker and die.

Hyacinths should be planted in an open and airy situation, but

must at the same time be sheltered from the north and east winds. The spot should be warm and dry, and the bed be about four feet wide. In preparing this bed all the earth should be first dug out to the depth of two feet, then the bottom should be dug over, and the earth rendered loose that it may have a ready drainage, as damp is fatal to the Hyacinth. The space left is to be filled with light sandy soil, mixed with rich loamy turf, well rotted, or leaf-mould. The Hyacinth growers near Haerlem are said to employ leaf-mould, fine sand, and well-rotted cow-dung; any sand not contaminated with iron will do: when cow-dung is used, it is important that it be pure, without any mixture of horse-dung or litter, which injure the bulb. The compost must be laid on the bed to the depth of three feet; but it must not be trodden hard down. The bulbs should be planted about the beginning of November, and the bed raised ten inches above the path on the north side, and four inches on the south side, forming a regular slope towards the sun. Over the whole, about an inch in thickness of dry sandy earth should be spread, with the position each bulb is to occupy marked out. They should be planted in rows, the line being used. The bulbs should be pressed in, not dibbled, they should then be covered, from three to four inches deep, according to the size of the bulb. By the beginning of April the earlier sorts will show flower, and the finer, particularly the reds and blues, will retain their colour and last much longer if shaded, which may be done by an awning; one that is moveable is best, as they should only be covered during the middle of the day, and during heavy rain or high winds. As the stems advance they will require support with sticks or wires, painted green, to which the stems must be tied from time to time, using green worsted, and being careful not to injure the plant. Except in very dry seasons, they require no water.

Those which are not to bear seed should be taken up when their leaves fade, on a dry day: care must be had not to damage the off-sets. They may lay close to each other on the bed, covered with earth to an inch thick for about a fortnight, to dry; and then they may be cleaned from dirt, dried leaves, and off-sets, and be put by in a dry airy place, to remain till autumn. It is sometimes advised to let the off-sets remain on the parent plant till the time of re-planting the off-sets, which must be a month earlier than the old bulbs. This is probably the safest method, as off-sets sometimes are apt to shrivel if kept out of the earth. Off-sets are to be treated exactly like seedlings of the second year, and should be planted in rows six inches apart, and four inches from bulb to bulb: and covered with about two inches of light soil. Small off-sets may remain out more than one year after planting, occasionally stirring the surface, and keeping clear of weeds. Off-sets seldom produce good or strong bloom before

the third or fourth year: they must, therefore, not be mixed with full-grown bulbs in their beds.

IRIS.—There are many varieties of the Iris, all very pretty, and generally hardy. The *xiphioides* is coming much into cultivation as a florist's flower. It will grow in almost any soil, and the roots should remain two years in the ground, when it will throw off off-sets. *The Persian Iris* is a little bulbous plant, of great delicacy, about seven or eight inches high, producing a very sweet-scented and regularly-formed flower in March and April. It is generally raised in pots, into which it should be put about October, the pots being filled with a mixture of sand and fine rich mould. There are several other sorts, all hardy, and propagated by dividing the roots in autumn, but not too frequently. The *lusitanica* is common in our gardens, flowering abundantly in June, having varieties of blue and of white flowers. This is the *Fleur de lis* of the French arms. *I. chalcedonica* is very curiously mottled, black and white. They all like good garden soil, and increase fast.

LATHYRUS LATIFOLIUS, *the everlasting Pea*,—is a perennial plant, originally from Provence. It grows four or five feet high, and very luxuriant, requires support. It produces abundance of pinkish blossoms in July and August.

LILIUM, *the Lily*.—Of this well-known bulb, there are many kinds which admit of out-door culture; we will only enumerate a few: the *Martagon*, or Turks' Cap; *Pennsylvanicum*, *Philadelphicum*, *double* and *single white*, *tigrinum* and *bulbiferum*. They are easily managed, thrive best in light rich loam, and only require to be removed, from time to time, when the clusters of roots become too large to flower freely.

LYCHNIS.—The *chalcedonica*, *floscuculi* and *viscaria* are pretty herbaceous plants, and well calculated to adorn the open border. They do not rise over twelve or eighteen inches in height, and make a pretty show early in the season; very little care is required in their culture. To increase them, divide the clumps, which will induce free growth and abundant bloom.

MIRABILIS, *Marvel of Peru*.—A tuberous-rooted plant, which, when grown in a soil it likes, will attain to three or four feet high. It produces a pretty single flower of red, yellow, purplish-white, and frequently striped with red and yellow, &c. It is propagated by seed, or by dividing the root, like the Dahlia; its management and habits are similar to those of the Dahlia, which see for its cultivation. The roots are not so difficult to keep as those of the Dahlia, and may be laid by, in any dry place, safely till the early spring, when they may be placed in pots till frost is over.

NARCISSUS.—There are several kinds of this flower, all bul-

bous and hardy: the common Daffodil is one, which see. The paper white is admired for its delicately white flowers, and grows to a foot and a half high. The Jonquil is another variety, and is very sweet scented; it sends up an elegant and slender stalk, ten or twelve inches high, bearing a bunch of bright yellow flowers. The Polyanthus Narcissus, has three varieties: one pure white, one white with a yellow cup in the middle, and another all yellow, producing abundance of flowers: they are all cultivated in a similar manner to other hardy bulbs, but should be taken up once in two or three years for dividing the off-sets from the roots, and be re-planted immediately.

ONOTHERA, *Evening Primrose.*—A very pretty biennial, which in the evening blows a fine yellow flower from July to September. It must be sown in the spring, where it is to blossom the following year. Any soil will do; but it prefers good garden mould.

PÆONIA.—The *Pioney*, as it is called, has been much extended in variety within a few years, and European collections contain many which have not yet reached this country. The tree or hard-wooded variety, *P. arborea*, or *Moutan*, its Chinese name, is a beautiful plant, and in a favourable situation in dry soil, is magnificent. No plant can be a more gorgeous ornament of the garden, than a well-grown specimen of this kind, abounding as it does in leaves, striking from their branched character and numerous segments, and its very magnificent flowers of extraordinary size. A specimen in England, planted soon after its introduction from China, (they being then worth ten guineas each; around Philadelphia, they may now be had for a dollar,) has become a bush 14 feet in diameter, and has in some seasons borne one thousand flowers. It thrives best in moderately dry rich loam, is perfectly hardy, but being an early bloomer, has the flowers sometimes discoloured by frost. It will therefore be well to have a movable shelter at hand, to apply if necessary, when the buds are expanding. *P. whitleyii, fragrans*, and *humeii* are herbaceous varieties of merit; the first is of a rich creamy white, the petals edged with blush, the fragrans is rose-coloured, and yields a delightful perfume. They flower freely, and withstand the winter in any soil. There are others which may be had from most florists; as the *corallina, cherry-red; tenuifolia, fine-leaved; albaflora simplex, single-white; humilis, dwarf-rose; &c.*, which are quite desirable.

PRIMULA, *Polyanthus* or *Primrose.*—This is a beautiful flower, either for the border, or to be kept in a pot; they are all dwarf Alpine plants valuable in horticulture. The varieties are very numerous, varying in price, in England, from a pound to a shilling. It is managed much in the same way as the Auricula.

The soil best adapted for this and the primrose, is a loamy and moist but not too rich soil. It prefers shade, and will grow in a stiff clay. When raised by seed, the same process will be necessary as for the Auricula. It is most commonly propagated by slips or off-sets. The plants are very apt to degenerate or die, if left too long in the same situation. Therefore replant them as directed for the Auricula, immediately after they have done flowering. The polyanthus will, however, thrive much better when planted in a shady border, than in a pot. When the slips are separated from the old roots, an ivory paper knife, or a thin piece of wood, is a better tool than a common knife, which is apt to destroy the root. Each root should be shaken free from all adhesive mould, the off-sets taken off, and the roots divided and replanted at five or six inches distance, in a fresh dug border, or be put into pots, and well watered, being set in a shady place. They may be protected in the same manner as Auriculas during severe frosts. The PRIMROSE is nearly allied to the Polyanthus; and there are several varieties of double Primroses, that may be grown either in the open border, or in pots. These kinds are to be cultivated like the Auricula; but as the double white does not produce many off-sets, it is best to slip them with a knife into as many parts as there are crowns or hearts, with a portion of fibrous root, when they have flowered, watering plentifully.

PENSTEMON, *P. Murrayanus*, a hardy plant, introduced into this country (England) from Texas. It may be raised from seeds forwarded on heat, and transplanted into a rich soil. It grows four or five feet high, and in the summer and autumn produces large bunches of rich glossy scarlet blossoms.

The narrow-leaved (*P. Augustifolia*) is a hardy perennial, growing about two feet high. The flower somewhat resembles the Foxglove, but is more beautiful. It is propagated by dividing the roots in autumn.

POTENTILLA, or *Cinquefoil.*—Many varieties of this plant have been introduced into our gardens of late years, such as *Potentilla Napolensis*, and *P. Russelliana;* which, with others of the same sort, are very much admired as border flowers, as they continue long in bloom. They are frequently grown in pots, and in this case it is indispensable to drain well, by placing an inch or two of broken potsherds in the pots, and using turfy loam and peat, well chopped together. The best time for potting is early in the spring, or immediately after the flowering season. When planted in a border the soil must be light, and well drained, as stagnant moisture prevents the plant from thriving. The former kinds we have mentioned; and *P. atrosanguinea* will require to have their roots slightly protected through the winter. They

are propagated by dividing the roots when done flowering, or in the beginning of April, or by sowing the seed as soon as ripe, clearing it from the pulp of the fruit. When the plants are large enough, pot them, or place them in open ground.

Ranunculus, or *Crow Foot*, is a tuberous-rooted plant, like the Anemone: it is sufficiently hardy to bear the open air in our climate. There is a great variety of colours among Ranunculuses, and they may be raised from seed which must be treated like that of the Anemone, or more readily by dividing the roots. The soil best suited for them is a rich loam with a slight mixture of well-rotted dung. A narrow bed should be formed, across or along which lines should be drawn to mark the situation where the tuber is to be placed: this should be at about six inches apart each way; the tubers are to be pressed down into the soil on which a little sand is laid, and not to be placed in with a dibble or in a drill: when they are placed, cover the whole with about two inches of light soil. The most common time for planting the Ranunculus is October; but when a succession of flowers is desired, some may be planted every fortnight, from October till February. Those designed to bloom late will require good watering. If some tubers are placed under a frame in September, they will bloom in January or February, particularly if tubers are selected which have been kept out of the ground at the previous planting, as these will grow the most quickly. Those planted in autumn, will require occasional shelter during severe frosts, by placing a little litter or a mat supported by hoops; but all covering must be removed both by night and day in open weather. Those which were planted late, and did not appear above ground till the severe frosts are over, will require no protection; they must be moderately watered in dry weather, particularly when they are going to blow; if the bed is exposed to the full blaze of the noon-day sun, it will be requisite to shade it when the flowers are in bloom, by hoops and matting or an awning. The Ranunculus being a favourite florist flower, it has been crossed and varied in every possible way, till there are upwards of eight hundred named varieties, of every colour, from pure white to glossy black, and of every intermixture that can be thought of.

When they are out of flower and the leaves die down, the tubers must be taken up, picked clean, and carefully dried, when they must be put away in drawers or boxes, kept out of the reach of damp, but not excluded from air, and by no means pack them thickly over one another. For further particulars in the culture and management of the Ranunculus, see Anemone.

Tussilago, *The Sweet Scented Colt's Foot*, is a native of the

north of Italy, and was introduced into England in 1806.—It flowers in January and the early spring months; and though its pale lilac flowers have little beauty, its fragrance, resembling that of the Heliotrope, renders it a deserved favourite. It is easily propagated by dividing the roots and planting them in a free loamy earth, though it will grow in any soil. As it sends out long under-ground runners, care must be taken to prevent its smothering other border flowers. It is often grown in pots, and it will be necessary frequently to re-pot the plant, taking care not to disturb the root, but breaking off all the runners which shoot along the sides of the pot. Severe frost, though not injurious to the plant in the ground, will injure it in pots, unless its roots are protected.

TULIPA, or *Tulip*.—This is the most choice of the florists' flowers, and its management as such is too expensive to fall within the limits of the means possessed by the proprietors of private gardens;—the price of a prime bed of Tulips amounting to from £500 to £1000. There are endless varieties of Tulips, but they are all propagated in the same way, either by seeds, practised only by florists, or by off-sets managed as we have already directed for the Hyacinth. They make a very pretty show in clumps in the border; but those who wish for a Tulip show, prepare a bed either long or square, raised a little in the centre, and rather higher than the rest of the garden. The bulbs are to be put seven inches apart each way, and the bed should have an awning to protect the Tulips from heavy rains, or the fierce rays of the sun. The beds are prepared in the same way as those for Hyacinths, only without sloping to the south.

It is not, however, necessary for the enjoyment of this flower, to incur the expense indicated; very pretty varieties may be procured at $1 to $2 per dozen bulbs, assorted; and a few thus purchased and carefully cultivated, will in a few years produce an ample stock for personal gratification, and presents to friends; the latter no inconsiderable source of pleasure derivable from the culture of flowers.

VERONICA CHAMÆDRYS, and the *Saxatilis*, may be raised from seeds or cuttings, which require little care to make them root. They send up spikes of from ten to twenty bright blue flowers, and grow nearly a foot in height; they flower from May till the end of July, when planted in a shady situation; but a hot sun injures the beauty of the flowers. In taking up the plants they should have good balls, and be planted in a rich free soil composed of loam and leaf-mould.

VIOLA TRICOLOR, *Heartsease* or *Pansies*.—Within the last few years this simple, but strikingly beautiful flower, has come into

high estimation as a florists' flower. There are now several hundred named varieties. The old and common kinds are perennial, but many of the new and expensive sorts are strictly annual. They require great care in their cultivation, to prevent their degenerating or sporting their colours. Like other plants which shoot out runners, they very quickly deteriorate the soil in which they grow, and require to be frequently transplanted, not taking up balls of earth with the roots, but washing all the earth away cleansing the roots carefully of the excrementitious slime which adheres to them. It likes a shaded situation; not one, however, on which the sun never shines, but enjoying only the morning or evening rays, while it is protected from its mid-day splendour. It is propagated by seeds, by layers, or by dividing the roots. The seeds are contained in a capsule or pod, which must be carefully watched, or it will scatter its seed before you are aware. When the plant is to be propagated by seed, this must be sown between April and September, soon after it is ripe, in a rich light loamy soil, in a shaded situation, but not under trees. The seeds should be sown evenly, and as thinly as possible, in pans or boxes placed in a gentle heat till the seeds germinate. If heat cannot be applied, the seeds should not be sown late in the season, or the seedlings will not acquire size enough for transplanting. They must be kept under some kind of shelter at night, and in frosty weather, or they will be cut off. Those sown in the spring will be in danger from drought unless carefully watered. They must be kept free from weeds, and preserved from the depredations of worms, snails, and slugs. When the seedlings are about an inch high they may be planted out, about six inches apart, in shady weather; they may afterwards be thinned to half these distances, which will be sufficient space till they show flower. By this method, new and very beautiful varieties are produced, when the seed has been taken from first-rate plants. Slipping, or dividing the roots, may be done at any time; and should be resorted to when the plants straggle up, or the colours run, or the flowers become small; never suffering the plants to get more than three inches high. Take up the roots and divide all the slips from them which possess root fibres; these must be washed clean, and planted out in a shady border, and be abundantly watered. It is best to do this in the spring or summer months, to allow the slips to form strong bushy plants. Any that appear sickly or drooping will be assisted by having a hand-glass turned over them. There are some sorts, such as Sylvia and the Hybrids, from the Windsor park, which cannot easily be slipped, and are only propagated with certainty by layers, they being annuals, though the perennial varieties succeed best by cuttings or slips. Layering is best performed from the last week in May till the middle of June; and again, and

perhaps, most successfully, in September. Layering Heartsease is best performed when the earth is moist enough to have some adhesiveness, but is not wet enough to soil the leaves. The earth should be removed all round the plant, when the shoots should be laid down in the hollow, and covered with rich compost. If the annual sorts are covered with a small hand-glass, it will sometimes make them throw out roots readily; but the perennial sorts do not require this. Cuttings are best struck in the middle of autumn, if the weather be moist, which it must be if this operation be performed with success. The shoots chosen for cuttings must be healthy and young; for those which are woody or hollow will either not strike, or produce only unhealthy plants. The cuttings must not have more than four joints, and be cut off close to a joint, as all that is left below the joint is sure to rot, and destroy the whole cutting. Choose a well-shaded and moist situation, but not under the drip of trees. If the spot is exposed to the sun, the cuttings must be shaded with some slight covering. The soil may advantageously be watered with a fine rose watering-pot some hours before planting. When the cuttings are planted, not more than an inch should be left above the soil, and the earth must be pressed firmly round the joint at the bottom of the cutting, for on this much of the success of the operation depends. A slight sprinkling of water may then be given, but not so much as to unsettle the root. The cuttings will require shading more particularly than watering; but not so as to exclude the light and air, or they will blanch and die off. After the first fortnight take off the glass, mat, or other covering at night, and replace it at nine in the morning, or before the sun reaches them strongly. When the cuttings begin to grow, pinch off the tops, which will assist their striking, and render them bushy. When the plants are sufficiently strong, all authorities agree in recommending frequent transplanting; but it must be done in cloudy weather, and when rain may be safely anticipated. Beds may be planted in March and April for summer blowing, with cuttings which were struck the preceding autumn. Wash the roots, and insert them two or three inches deep into the soil, watering them well afterwards. Other beds may be planted out in September, October and November, which plants will flower in the spring. The best situation for a bed of Heartsease is a spot which has the morning sun till about ten o'clock, or the afternoon sun after three. When Heartsease are kept in pots, as may readily be done, if a rich loamy compost is used, the plant may be trained by a single stem to a small trellis, when it will attain a foot or more in height. The tops may be pinched off when they rise too high, which will make them branch out. They must be kept constantly watered, never

allowing them to become dry; nor, on the other hand, must they be exposed to too much sun.

CHAPTER VIII.

ANNUAL, BIENNIAL, AND PERENNIAL FLOWERS.—The annexed list embraces a handsome assortment of border flowers, which are reared from seed, and principally bloom the same year in which they are sown. The following directions for their culture, which we have extracted from the catalogue of Messrs. D. Landreth & Munns, Seedsmen, Philadelphia, may be of service to the inexperienced.

OBSERVATIONS ON THE CULTURE OF ANNUAL AND BIENNIAL FLOWERS.

Nature of the soil, and its preparation for use.—The soil best adapted to the greater variety of garden flowers, is a deep rich loam, by which is to be understood, a consistence not so much abounding in sand as to have the particles separate or distinct, nor so tenacious as to require an effort to pulverise it, in the operation of digging. But as in most cases we are unable to select our garden location, with reference to that object alone, it therefore remains for us to accommodate ourselves to circumstances, and obtain by artificial means that which is otherwise denied. Those whose residence is on a soil in which sand is the chief component, may much improve it, indeed, mainly overcome the objection, by the use of loamy, or if that cannot be obtained, clayey matter, well incorporated with it; not in an excessive quantity, but in moderate dressings from time to time, which, with the free use of decomposed manures, (alone calculated for light dry soils,) may ultimately bring it to produce in perfection, nearly every flower which admits of garden culture—and the task is not an impracticable labour, when directed only to the department of the flower-garden. On the contrary, those whose location is on *stiff, clayey soil*, may correct the evil, by the free use of sand of any description; pure river sand, for instance, is quite suitable, the object being not to enrich, but to render less adhesive; the sand should be thoroughly incorporated with the natural soil, as deeply as may well be done with the spade, and if the texture be, or approach the stiffest clay, it may be necessary to trench-dig it, so as to get a still deeper soil of the proper kind,—indeed in some cases it may be found necessary to under-drain, which is done in a variety of modes; the most simple of which is by digging trenches of a few inches width, and so deep

as not to be disturbed by the culture of the crops, which trenches, after being partially filled up with brick-bats, shells, coarse gravel, or similar substances, are entirely closed with soil—the drains, however, are of little use unless they have a reasonable descent, and discharge beyond the boundaries of the garden.

The laying out the grounds.—Having obtained the proper soil, the next step is to lay out the grounds, which must be governed in some degree by their shape and location, but mainly by the taste of the proprietor. Some are pleased with regular beds and borders—others can see no beauty in straight lines, and form their grounds into ovals, circles, and irregular figures of many forms. Perhaps a union of the two modes, is the truer taste; in either case they should be edged with neatness, and for that purpose box-wood, the vernal iris, thrift, grass, &c., are used; where it is desired to combine utility and ornament, the strawberry may be used with advantage. That work performed, it then becomes necessary to enrich the soil, or supply the exhaustion of repeated cropping; for this purpose, in the flower-garden, decomposed manure and such as is least likely to contain the seeds of weeds, or grasses, only should be used. It may be applied immediately preceding the spring digging, or, which is preferable, in the autumn. At the proper time, in spring, the ground should be deeply dug and thoroughly pulverized, preparatory to receiving the seeds.

Time and mode of sowing the seeds.—There are some few hardy annual flowers which grow more vigorously, and, of consequence, whose beauties are more fully developed when sown in the autumn, so as to vegetate previous to frost. Among such may be enumerated the beautiful double *Larkspur*, all varieties of *Poppies*, *Gillia*, *Strawberry Spinach*, *Sweet William*, *Pinks* of all kinds, *Evening Primrose*, *Coreopsis tinctoria*, &c. There are others which will not endure the frost, but the seeds of which vegetate much earlier in the spring, after having passed the winter in the earth, among which are the *Convolvulus*, the varieties whereof are very showy when properly trained: *Cypress Vine*, *Marvel of Peru*, *variegated Euphorbia*, *Double Balsamine*, *Centaurea*, *Helianthus*, &c. These, when opportunity admit, should be sown in autumn, and the places carefully marked, that the earth may remain undisturbed in spring, when digging that adjacent. Most varieties of garden flowers are, however, sown in spring, indeed *all* may be, with success. With many delicate kinds, the best mode by far, is to start them in a hot-bed or in a cold frame, under glass. The management of these frames requires some little practical experience, and young gardeners would find it more satisfactory to obtain instruction from some competent neighbour, than to depend on merely written

directions. In the vicinity of Philadelphia, the time chosen for setting these beds is about the first of March; of course it should be later or earlier, as we reside north or south of that latitude. The beds do not require to be formed of much manure, and great care should be used that they are properly ventilated, else the plants will grow weakly, and be unable to bear transplanting.

As, in all probability, most cultivators of flowers may not find it convenient to form hot-beds for this purpose, our remarks will be directed to their culture in the open ground. About the 1st to the 15th of April, for the latitude of Philadelphia, or as a general direction, when the apple or pear is in full bloom, the work in the flower garden may safely commence. The borders and compartments, intended to be decorated, should receive a good dressing of manure, (if not applied in autumn,) and be neatly dug and raked free of clods, stones and inequalities, in which state it will be ready to receive the seeds of the more hardy flowers, which may be sown, either in patches in the places which they are permaneatly to occupy, or in parallel lines across the beds, to be subsequently thinned out, and transplanted to other portions of the grounds; in many cases the latter is the better plan.—One advantage is, that a small piece of ground only is required to raise the plants, and, as they thrive best on freshly dug ground, the garden need not be dug until they are of a suitable size to transplant; they are also more readily weeded in such rows, or seed-beds, and unless that be attended to with much care, those which are slow to vegetate, or of weak growth, may be overrun, and perhaps totally destroyed. The rows should be separated sufficiently to admit a small hoe between them, and should be plainly marked to facilitate the weeding. Seeds which are of small size, and many flower seeds are exceedingly minute, should, when sown, be covered very delicately, not exceeding a small fraction of an inch; the usual plan is to draw the rows of a depth to correspond with the size of the seeds to be sown, and after sowing close them by drawing a rake in the direction of the rows, or by sprinkling a little nicely prepared earth over them.

With all the skill that may be used, it not unfrequently occurs, that owing to unfavourable circumstances, such as too much or too little moisture, cold, chilly weather, &c., the seeds fail to vegetate; therefore the best precaution is to repeat the sowings of each kind, at short intervals. From the 15th of April to the early part of May, or as a uniform rule for different latitudes, when the oak and other late sprouting trees put forth, the more tender annuals may be sown, and though they require more care than others, amply compensate by their exceeding beauty.

Transplantation and subsequent culture.—When the plants have attained a sufficient size, let them be removed, in moist and

rainy weather, to the positions they are intended to occupy, or if they have been sown in such positions, thin out the excess. The arrangement of them is much a matter of taste, but in general the most agreeable and picturesque effect is produced by clumping them, and in such a manner as to contrast colours. In the operation of transplanting, use a trowel to ease them up, and a dibble to insert and tighten the roots. Most persons are liable to crowd them, in which state their beauties are but partially developed; one vigorous plant is more pleasing than a dozen puny and attenuated. In view of greater safety do not set out all on a single day, lest the sun suddenly shine forth and destroy them, but repeat the work from time to time, in suitable weather. If it should prove dry soon after transplanting, it may be found necessary to give water, and in a few days the surface of the ground should be stirred, which will invigorate them. As they advance in growth, frequent weeding and hoeing will be necessary as well for the sake of neatness as to stimulate. Some will require the support of small sticks, others of stakes, which should be hidden from view as much as possible, and those which are climbers may need assistance in their first efforts to clasp the poles or trellis.

Neatness in a flower garden is of the first importance, and neither the variety or beauty of the plants, will compensate for its absence. It is in vain to expect a pleasing effect from flowers if they are overgrown by weeds, or the walks and general aspect of the grounds evince disorder.

It may be worthy of remark that European catalogues contain the names of a multitude of flowers which are of but little worth. Many of them present nothing attractive — others which are beautiful, are unsuited to our climate, and seldom reach perfection.

c denotes climbing or running plants, a annual, b biennial, p perennial, t tender.

a Adonis miniata—Flos Adonis, or Pheasant's eye.
a Amaranthus caudatus—Love lies bleeding, red and yellow.
a ——————hypocondriacus—Prince's Feather.
a ——————var. giganteus—Monstrous crimson Amaranthus.
a ——————tricolor—Three coloured do.
p Angallis—Pimpernel.
b Argemone Mexicana—Yellow Prickly Poppy.
b ——————albiflora—White flowered do.
a Aster sinensis— { China Aster, fine double flowers of various colours.
a Avena sensitiva—Animated Oats.
p Agrostemma coronaria—Rose Campion

p Agrostemma rosea alba—Do., with white centre.
p Althea sinensis—Chinese Hollyhock, double, and variously coloured.
p Antirrhinum majus—Snap Dragon, finely variegated.
p Aquilegia vulgaris—Double Columbine, variously coloured.
p Asclepias tuberosa—Orange Swallow-Wort.
c Blitum capitatum—Strawberry Spinach.
a Cacalia coccinea—Scarlet Cacalia, or tassel flower.
t b Calceolaria sp.—Calceolaria, or slipper wort, various, very splendid.
a Campanula speculum—Venus' Looking-glass.
a Centaurea Americana—American Centaurea.
b ——— benedicta—Blessed Thistle.
a Celosia cristata—Dwarf Crimson Cockscomb.
a ——— var. lutea—do. Yellow do.
a Cheiranthus annuus—Ten week Stock-jilly-flower, scarlet, purple, and crimson.
b ——— var.—Brompton stock, various colours.
p ——— cheiri—Bloody Wall-flower.
a Chrysanthemum coronarium—Annual Chrysanthemum, white and yellow.
t a Clarkia pulchella—Beautiful Clarkia.
a ——— elegans—Elegant do.
a Cleome grandiflora—Great flowered Cleome, new and beautiful.
a Collinsia grandiflora—Great flowered Collinsia.
t a ——— bicolour—Two coloured do.
a Convolvulus minor—Dwarf Convolvulus, beautiful.
a c ——— major—Large do. various colours.
p Coreopsis tinctorea—Elegant Coreopsis.
5 Crepsis barbata—Golden Hawkweed.
t a c Cucurbita clavata — Club-shaped Gourd (*fruit six feet long.*)
p Campanula media—Canterbury-Bell, white and blue.
p Campanula var.—Campanula, double-flowered.
t p c Cobea scandans—Mexican climbing Cobea.
t a Calendrina grandiflora—Great flowered Calendrina.
t a ——— speciosa—Showy flowered do.
t a ——— discolour—Various coloured do.
a Delphinum var. fl. rosea—Double rocket Larkspur, various colours, mixed—beautiful.
p ——— grandiflora—Perennial Larkspur.
p Dianthus annus—China Pink.
p ——— caryophyllus—Carnation Pink.
p ——— hortensis—Clove Pink.
p ——— plumarius—Pheasant's-eye Pink.

p Dianthus barbatus—{Sweet William, new and splendid varieties.
p ——— deltoides—London Pride.
p Digitalis purpurea—Purple Fox Glove.
p ——— lutea—Yellow do.
p ——— ferruginia—Iron coloured do.
p ——— grandiflora—Great flowered do.
t a c Dolichos lablab—Purple Hyacinth Bean.
p Dahlia pinnata—{Mexican Dahlia, the most showy of flowers, various colours mixed.
a Euphorbia variegata—Variegated Euphorbia.
p Eupatorium cœlestes—Blue, or celestial Eupatorium.
a Escholtzia crocea—Yellow Escholtzia.
b Glaucium luteum—Horned Poppy.
a Gomprena globosa—{Globe amaranthus, or Bachelor's-button, white and purple.
b Gilia capitata—Blue Gilia.
b —— tricolor—Three coloured do.
b Hesperis matronalis—Rocket.
p Hemorocallis cœrulea—Blue day lily.
p Hibiscus palustrus—Swamp Hibiscus.
b ——— manihot—Palmated yellow do.
——— splendens,
a Iberis var. speciosa—New Purple Candytuft.
a Impatiens balsamina—{Balsamine or Lady's Slipper, fine double flowers, beautifully variegated.
a ——— var.—Carnation Balsamine, new, superbly mottled.
a Ipomea quamoclit—Crimson Cypress vine.
a c ——— coccinea—Scarlet Morning-glory.
a c Lathyrus odoratus—Sweet Pea, in variety.
p c ——— latifolius—Everlasting Pea.
a Leptosiphon densiflorus—Close-flowered Leptosiphon.
Loasa nitida—Shining Loasa.
a Lupinus pilosus—Large blue and white Lupin.
a ——— luteus—Small yellow Lupin.
a ——— Cruikshanki—Fine new Lupin.
——— nanus—Dwarf Lupin new and beautiful.
p Lychnis chalcedonica—Scarlet Lychinis.
p ——— var.—White do.
a Malope trifida—Scarlet Malope.
t b Mesembryanthemum crystalinum—Ice Plant.
t a Mimosa sensitiva—Sensitive Plant.
a Mirabilis jalapa—Marvel of Peru, various colours.
t b Mimulus ringens—Monkey Flower.
a Nemophila atomaria—Speckled Nemophila.

a Nigella Damascena—Damascus Nigella.
a Nolana prostrata—Trailing Nolana.
p Onothera grandiflora—Evening Primrose.
a Papaver somnifera—Opium Poppy.
p ——— bracteata—Perennial Poppy.
a ——— var.—Poppies, of various kinds.
Penstemon pubescens—Downy Penstemon.
——— rosea—Rose-coloured, do.
a c Phaseolus multiflorus—Scarlet Running Bean.
——— var.—Painted Lady Bean.
b Petunia nyctaginiflora—Large fl. Petunia.

INDEX.

A

Acacia 28
Acer 60
Aconite 76
—— Winter ..... ib.
Æsculus 61
—— macrostachya 45
Agapanthus umbellatus 28
Agrostemma 78
Ailanthus glandulosa 61
Almond, Dwarf 44
Althea 49
—— sinensis 76
Amaryllis 28
—— formosissima 78
Amygdalis nana 44
Anemone 77
—— Hepatica 78
Aniseed tree 39
Annual, biennial and perennial flowers 95
Antirrhinum 78
Ampelopsis quinquefolia 73
Arborvitæ 72
Aristolochia sipho 73
Ash 62
Aster argophyllis 28
—— Cape 36
Aquilegia 78
Aucuba Japanica 28, 45
Auricula 29
Autumnal crocus 80
Azalea 28, 45

B

Balm of Gilead fir 71
Bark tree, Georgia 51
Beech 61
Begonia discolor 30
Bellis 78
Bengal ever-blooming roses .. 52
Berberis vulgaris 45
—— aquifolium ..... ib.
Berberry ..... ib.
Betula 61
Bignonia 73
—— capensis 43
—— grandiflora 74
Birch 61
Birthwort 73
Bladder senna 45
Bletia Tankervilli 30
Broom, Scotch 58
Brunsvigia Josephina 30
Bulbs in water-glasses 19
Buxus 69
—— sempervirens 15

C

Cactus 30
Calycanthus Floridus 46
Camelina cœlestus 79
Camellia Japanica 31
—— alba plena 34
—— amabile ..... ib.
—— candidissima ..... ib.
—— conchiflora ..... ib.
—— donkelari ..... ib.
—— decora ..... ib.
—— dorsetti 35
—— estheri ..... ib.
—— Elphinstonia 36
—— fimbriata 34
—— heptangularis 36
—— Hosackia 35
—— incarnati ..... ib.

Camellia, Lady Hume's blush 35
—— Landrethii 34
—— multiflora ..... ib.
—— nivalis 35
—— sassanquea rosea 34
—— speciosa 35
—— pomponia plena 36
—— variegata plena 35
—— Welbankiana 36
Campanula pyramidalis 79
—— persicifolia .... ib.
Carnation 37
Carolina jasmine 74
Catalogue of flowers 99
Catalpa cordifolia 61
Cedar, red 69
—— white ..... ib.
Celastrus scandrans 74
Cercis Canadensis 47
Cheiranthus 79
China, tea of 43
Chionanthus Virginica 47
Chrysanthemum sinense 80
Cineraria 36
Cinnamomum camphora .... ib.
Cinquefoil 91
Cistus 36
Citrus 37
Clematis 37, 74
Climbing roses 57
Cobea scandans 37
Cockscomb 38
Coffee tree, Kentucky 62
Colchicum autumnale 80
Columbine 78
Colutea arborescens 45
Conservatory 20
Convallaria 81
Corchorus Japonicus 46
Coral plant 38
Corn flag 86
Coronilla 37
Correa ..... ib.
Corymbosum 38
Crape myrtle 39
Cratægus oxycantha 46
Creepers, hardy vines and ... 73
Crocus vernus 80
Crow foot 91
Crown imperial 85
Cruenta 46
Cupressus 61
—— thuyoides 69
Cydonia Japonica 46
Cypress, deciduous 61
Cytissus laburnum 46

D

Dahlia 82
Daisy 78
Daphne 37
—— Cneorum 47
Deciduous cypress 61
Deutzia scabra 47
Dianthus 31, 87
Digitalis 85
Dracana ferrea 37
Dragon plant, purple leaved .. ib.
Dutch pipe 73
Dwarf almond 44
—— horse chestnut 45

E

Eardrop, ladies' 38
Edgings 14
Elm 67
Epacis 37
Erica 37
Erythrina crista-galli 38
Euonymus 38
European mountain ash 66
—— privet 49
Evening primrose 90
Ever-blooming Bengal roses . 52
Evergreen thorn 70
—— trees, hardy 67
Everlasting pea 89

F

Fagus 61
Ficus 38
Fir, silver 71
Five-leaved ivy, Virginia .. 73
Flag, corn 86
Flower, passion 40
Flowers, catalogue of 99

Flower, globe 46
Flowers, annual, biennial and perennial 95
Foxglove 85
Franklinia 47
Fraxinella 86
Fraxinus 62
French honeysuckle 87
Fringe tree 47
Fritellaria imperialis 85
Frutescens 46
Fuchsia 38
Fumaria 86
Fumatory ..... ib.

G

Galanthus 86
Garden, laying out the 13
Gelsemium nitidum 38, 74
Georgia bark tree 51
Geranium 40
Gilead fir, Balm of 71
Gingko 65
Gladiolus 86
Glasses, bulbs in water 19
Globe flower 46
Glycine 75
Golden tree 46
Gold tree, Japan 45
Gordonia pubescens 47
Gorteria 38
Gravel walks 14
Green-house 21
Growth of plants 17
Gymnocladus Canadensis 62

H

Halesia 48
Hardy deciduous trees 59
—— evergreen trees 67
—— ornamental shrubs 43
—— vines and creepers 73
Hawthorn 46
Hearts-ease 93
Heath 37
Hedera helix 74
Hedysarum 87
Heliotropium Peruvianum 38
Hemlock spruce 71
Hesperis 86
Holly 69
Hollyhock 76
Honeysuckle 75
—— French 87
—— Wood 45
Horse-chestnut, dwarf ..... ib.
Hyacinth 87
Hybiscus Syriacus 49
Hydrangea 39
—— hortensis 49
Hyrpeicum ..... ib.

I J

India rubber tree 38
Ilex 69
Illicium 39
Iris 89
Ivy, Virginia five-leaved 73
Jacobean lily 78
Japan gold tree 45
Japonicus argenteus 38
Jambosa vulgaris 39
Jasmine, Carolina 74
Jasminum officinale ..... ib.
Judas tree 47
Juniperus, Suecia 69

K

Kalmia 49
Kennedia 39
Kentucky coffee tree 62

L

Laburnum cytissus 46
Ladies' eardrop 38
Lagerstræmia 39
Lathyrus latifolius 89
Laurel 49
——, mountain 42
Laurustinus 43
Laying out the garden 13
Leadwort 42
Ligustrum Europa 49
Lilac 59
Lily 89
—— Jacobean 78
—— of the valley 81

Linden 66
Linum 39
Lime tree 66
Liriodendron tulipifera 62
Lonicera 75
Lychnis 89

M

Maclura aurantica 62
Magnolia 39, 63
—— obovata 50
Maiden-hair tree 63
Manettia glabra 39
Manure 18
Maple 60
Marvel of Peru 89
Mespirus pyracantha 70
Metrosideros 39
Mimosa 28
Mimulus moschatus 40
Mirabilis 89
Mist tree 51
Mock-orange 50
Monkshood 76
Mountain ash, European 66
—— laurel 42
Musk plant 40
Myrtle ..... ib.
——, crape 39

N

Narcissus 89
Nerium 40
Norway fir 71

O

Observations on soils 27
—— on the culture of annual and biennial flowers 96
Laying out the grounds ... 97
Time and mode of sowing the seed 97
Transplantation and subsequent culture 98
Oleander 40
On planting 15
—— transplanting trees and shrubs 15
Orange 37
——, mock 50
——, Osage 62
Oriental plane 64
Ornamental shrubs, hardy ... 43

P

Pæonia 90
Pansies 93
Passiflora 40
Passion flower ..... ib.
Pea, everlasting 89
Pelargonium 40
Penstemon 91
Perennial, annual and biennial flowers 96
Periwinkle 75
Peru, Marvel of 89
Philadelphus 50
Pinckneya pubens 51
Pink 81
Pinus 70
Pioney 90
Plane, oriental 64
Plane tree 63
Planting, on 15
Plants, growth of 17
Plant, coral 38
——, musk 40
Plant verandah 21
Platanus 63
Plumbago 42
Polyanthus 90
Potentilla 91
Primrose, evening 90
Primula ..... ib.
Privet, European 66
Purple magnolia 50
—— leaved dragon plant 37
Pyrus aucuparia 66
—— Japonica 46

R

Ranunculus 92
Red bud 37
Red cedar 69
Remarks on the cultivation of herbaceous, bulbous and tuberous-rooted plants . .. 76

Remarks on the construction of the green-house 21
—— on the cultivation of evergreen trees 68
—— vines and creepers 73
—— on gravel walks and edgings 14
—— on manure 18
—— on planting 15
—— on transplanting trees and shrubs 16
—— on the formation of loam 27
Rhododendron 42, 71
—— maximum 72
Rhus continus 51
Robinia hispida 51
Rocket 86
Rose apple 39
—— campion 78
Roses.
—— Bengal ever-blooming .. 52
—— climbing 57
—— garden 55
—— Isle de Bourbon 57
—— noisette 56
—— noisette of clusters 54
—— microphylla 58
—— musk-scented ..... ib.
—— rock 36
—— tea 53
Roso-acacia 51

S

Salisburia adantifolia 65
Saxatilis 93
Scotch broom 58
—— fir 70
Senna, bladder 45
Shrubs, hardy ornamental ... 43
Silver fir 71
Snapdragon 78
Snowball 59
Snowberry ..... ib.
Snowdrop 86
—— tree 48
Soils, observations on 27
Sorbus aucuparia 66
Spartium scoparium 58
Spirea 58
Spring crocus 80
Spruce, hemlock 71
Staff tree 74
Steuartia 59
St. John's wort 49
Stock-jilly flower 80
Styrax 59
Sumac, Venetian 51
Swedish juniper 69
Sweet-scented colt's-foot 92
—— shrub 46
Symphora racemosa 59
Syringa ..... ib.

T

Taxodium 61
Taxus baccata 72
Tea 43
—— rose 53
Tecoma capensis 43
Templetoniana retusa 43
Thea 43
Thorn, evergreen 70
Thrift 15
Thuja 72
Tilia 66
Tree box 69
Tree, fringe 47
——, Georgia bark 51
——, gold 45
——, India rubber 38
——, Judas 47
——, Kentucky coffee 62
——, lime 66
——, maiden-hair 63
——, mist 51
——, plane 63
——, snowdrop 48
Tree of Heaven 61
Trees, hardy deciduous 59
—— and shrubs, on transplanting 15
—— hardy evergreen..... 67
Trumpet flower 73
Tulipa 93
Tulip tree 62
Tussilago 92

U

Ulmus 67

V

Valley, lily of the 81
Venetian sumac 51
Verandah, plant 21
Verbena 43
Veronica chæmadrys 93
Viburnum opulus 59
—— tinus 43
Vinca 75
Vines and creepers, hardy ... 73
Viola tricolor 93
Virgilia lutea 68
Virginia five-leaved ivy 73
Virgin's bower 37, 74

W

Walks, gravel 14
Wall-flower 80
Water-glasses, bulbs in 19
White cedar 69
—— dittany 86
—— pine 70
Wind-flower 77
Winter aconite 76
Wood honeysuckle 45
Wort, St. John's 49
Wych elm 67
Wistaria 75

Y

Yellow wood 68
Yew 72